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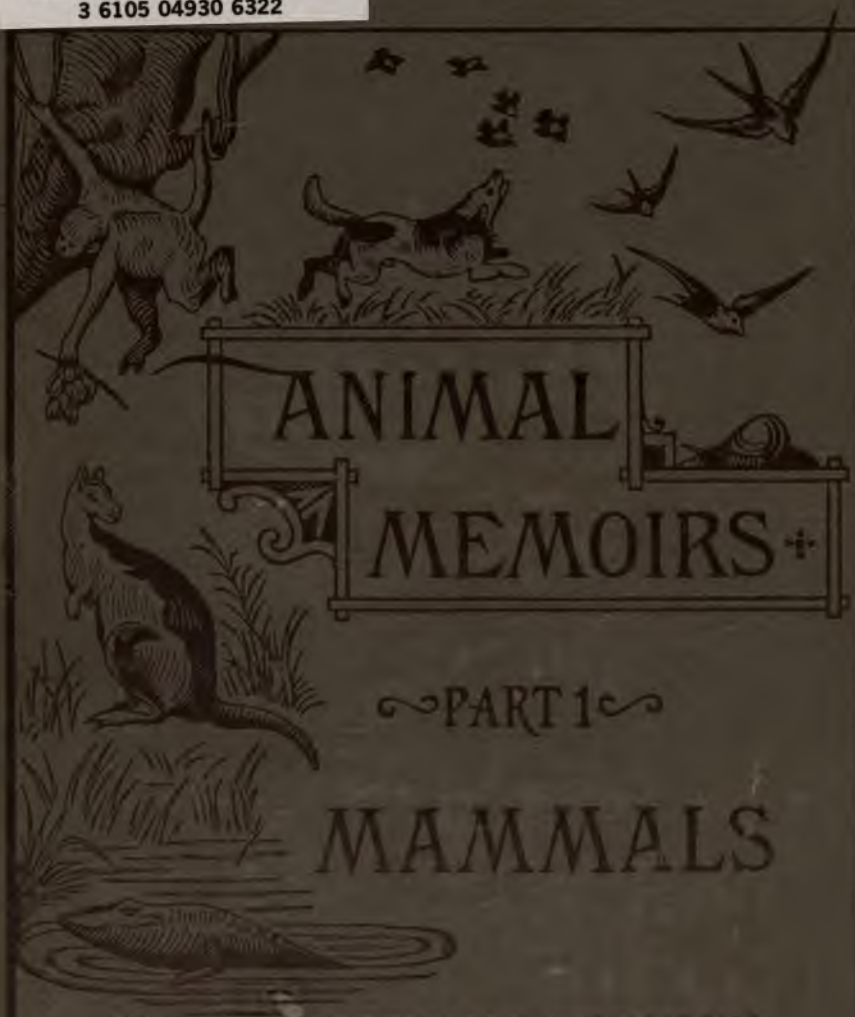
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ANIMAL MEMOIRS

PART 1

MAMMALS

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READINGS IN NATURAL HISTORY

ANIMAL MEMOIRS

PART I

MAMMALS

BY

SAMUEL LOCKWOOD, PH. D.

IVISON, BLAKEMAN, AND COMPANY

Publishers

NEW YORK AND CHICAGO

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ANIMAL MEMOIRS.

"Ask now the beasts, and they shall teach thee;
And the fowls of the air, and they shall tell thee."

The Man of Uz.

CHAPTER I.

INTRODUCTORY MATTERS.

IT is accounted the proper thing for an author to present himself in an introduction. And yet it is the common fate of this part of a book to be passed over unread except by a few. That probably was an eccentric homilist who would write his discourse first, and hunt up a text afterwards. Thus the so-called text was simply a motto. But my prelude is true to itself, and is for the revealing in a friendly way some personalities and other matters that may help to the understanding of this book,—hence I shall believe my readers will be more considerate.

I remember once looking into a book which was painfully technical and intensely dry. Turning to the prefatory part, I found the author deprecating the fact that the introduction to a book was like a fence which kept the horse from entering the field of

clover; so in his impatience the animal leapt over the fence. That writer's book dealt with abstruse matters, such as required hard study: so I am encouraged to think that my readers need not leap the fence to get into the clover-field.

Moreover, I have recollections of an old horse that managed matters better than by jumping the fence, even when in quest of clover. The manse stood in a clover mead, which in spring and early summer was a perpetual feast to old Getup. Leading to the gate of this home was a pretty lane,—green, and even redolent with white clover. Often the old fellow, just from a long tour in the hills with his master, would stop in the lane, even after the gate was opened, to take his déjeûner of the few stray clover heads, before betaking himself to the richer provision of the field.

But old Getup did not stay long outside the clover mead. A little cropping of the sward sufficed, when with a quickened appetite he entered the gate, and even ran to the meadow abloom with red-tops. And this must serve as a hint not to stay too long in this preludial lane.

One day, when a very small boy, I went with the family to pick blueberries. We got caught in a violent storm of rain and lightning, and many places were soon flooded. A poor snake, driven from its hiding-place by the water, lay torpid in the path by which we were returning. Supposing it to be dead I took the reptile up and carried it home. After changing my wet clothes, I sat before the fire with the snake on my lap, and with a pin I pointed out the diamond-

shaped scales to an almost baby brother, who interrupted my lecture by saying, "Oh, see, its tail is shaking!" Sure enough, it was alive. To my astonishment, the heat of the fire had revived it. In some alarm an older brother seized it with the fire-tongs, and it was destroyed. I was too young to know whether the species was noxious or harmless; and in truth I doubt if the household were any wiser on that subject than myself.

I felt very bad to have it taken from me. But a little picture of its ornamentation held a place for a long time in my memory. The pattern was a mosaic of pretty geometric figures. From that time on my taste grew. I had that day got a nibble in the lane which led to the rich and open field of nature. What an appetizer it proved to be! I hungered for more. My first book was Goldsmith's *Animated Nature*, which was read and re-read with avidity. I took in every thing, even the wild statement that Indians had passed safely over the Falls of Niagara in their canoes.

After a long life devoted to the study of Nature in her own haunts, and given by vocation to the education of the young, "the old Naturalist" was pressed to give his young friends some little book of a trustworthy character on natural history.

This, then, is how the undertaking got started. And as, in order to be consistent and truthful, some method must be adopted, let me take you into my confidence and tell you what I propose to do.

When I look at my watch, it is usually for the simple purpose of learning the time of the day, — a

very commonplace matter. But how much more interesting this response to my inquiry becomes, after the history of this little time-measurer is known! Beginning at the mines, how absorbing is the story of the silver or the gold which enters into the encasement, and especially that of the bit of iron extorted from the rock by fire, so skillfully wrought, that the subtly tempered steel into which it is transformed has become, weight for weight, more costly far than the fine gold of Ophir. Such is the hair-spring.

Then there is the jeweling of this little engine, so that each axle end of each tiny wheel revolves in a socket made of a gem or precious stone. Then I might, because of the peculiarities of workmanship, ask whether it was made in England, Switzerland, or America?

And, then, the profoundest inquiry of all — the origination of this device. Here I might have to delve through immense accumulations of progress, until I should alight upon the device of the time-measurer of the good King Arthur, whose wax-candles, marked off into lengths designating hours, were kept burning day and night.

Thus almost insensibly this course of inquiry has evolved a pretty history for our little pocket monitor of the passing time. Now, will my young reader analyze this statement of the watch? There is first the form; the most easily noticeable being the dial or external face. Then its constituent parts, its structure or organism, so to speak. Next its idiosyncracy, or peculiarity of workmanship, due to the nationality of the maker. And lastly the historic origin of the device, its career in invention.

Now, is it not curious that this is the philosophic method of considering that self-acting machine, or living thing, — an animal. But such a consideration of an animal form becomes a problem in natural history; and one which involves four factors in its solution. Each of these has a technical name, — first, the discussion of form, called *Morphology*, — second, that of structure, organs, etc., *Physiology*, — third, distribution into faunas, or geographical occupancy, called *Chorology*, which strange-looking word simply means "Place Science." And lastly, the question of origin, source or descent, thus involving the doctrine of cause. This is known by the name *Ætiology*.

Such is the category of considerations which Science imposes when discussing an animal form, one of those living engines "not made with hands," and possessing an inherent force not yet understood. These, then, are principles which I must not allow myself to lose sight of, although it is really my object to present natural history apart from the hard lines of technical zoölogy. In my selection of living forms, it will be for the purpose of discussing thinking as well as animate things, hence my object will be the portrayal of a number of these lower individualities in a series of animal lives.

These readings in Natural History, then, are to consist mainly of individual portraits, or animal biographies, given in the fourfold setting described above; but so far as possible without technicality of treatment, and with as little formal limning as is compatible with clear and truthful outlines. Thus I hope to do

similarly in kind for Natural History what Plutarch did for human history, in his portraits of Greek and Roman lives.

Whenever possible, such creatures will be chosen for treatment as I have known with that intimacy which attaches to pets. Thus I shall seem to myself to be actually writing the biographies of my humble friends. Structure, often quite wonderful, will be unfolded, and those habits, the sum of which constitutes a life, will be portrayed. In a word, my purpose is to give a series of animal memoirs, or lives of typical or representative creatures in the several sections of the *Vertebrata*, this being the highest branch of the animal kingdom.

And what profit to my readers in such a course? Surely, besides entertainment, this should widen the horizon of your knowledge, — and more. "Go to the ant, — consider her ways, *and be wise.*" Wisdom is more than knowledge; for one might read a great work on natural history, and though knowing more be not much wiser. But with the imagination and the judgment in healthful union let one enter into the mind of an animal, — that is, put himself in its place, and it will be surprising how much of one's self can be seen in that lowly thing. What prudence, and foresight even, do we find in the emmet, which not only lays up in its garner, but, like a provident housekeeper, saves from spoiling by bringing its stores out for an occasional airing.

And there is a forecasting of the weather, even by the insignificant snail, which is a meteorologist in

foretelling the changes which have to do with its health and comfort.

And there is conscience, too, in some of these lowly ones! For does not the intelligent dog sometimes know that he has done wrong and suffer unhappiness, — a sort of remorse in consequence?

And such magnanimity as I have seen, — an animal taking the part of the weak against the strong, although the sufferer belonged to a species against which its defender had a strong antipathy.

And what sympathy in distress, — as when one of these dumb creatures helps another in want. I once undertook to rob a nest of young brown thrushes when the parent-birds were away; but they caught me in the act. Each uttered one sharp piercing note of alarm; then disappeared. But the disappearance was only momentary, for back they came with a troop of sympathizing friends. Oh, that outcry of indignation, — that bevy of sympathizers, — there were robins, and different thrushes, catbirds, finches, etc. — all flying at me, and screaming in notes which plainly meant — "We'd like to pick your eyes out, — you mean fellow!" Yes, and I felt mean, though I did the best in my power to redeem my reputation by putting the young birds back into their nest.

I have spoken of sympathy and magnanimity in these lowly things, so I am glad to be able to narrate a true story of an old hen, which displays a charity of an extraordinary kind. The fowl belongs to a friend of mine, a worthy physician at Long Branch. The notable thing is that the bird's sympathy is

given to the offspring of a feline foe that entertained not a whit of tenderness for her chickens.

Last winter a little kitten which had been abandoned by its mother sought shelter in the doctor's hennery. It speedily tucked itself under the wing of a thoughtful old hen, who magnanimously adopted the little waif, and lovingly sheltered it from the inclement weather. The affection manifested by the two for each other was really demonstrative. The hen, in her preference for the society of her adopted *son*, ceased almost entirely to associate with the rest of her feathered family. The two were constantly together. "Kittie" nestled closely by the side of the hen. The latter exhibited always a strong willingness to share its food with Pussie, but though the cat would respond with filial promptitude to the clucking of the mother, it could never be induced to eat the angle-worms which she industriously unearthed in the early spring. It was really interesting to note the affectionate companionship of the two. They kept entirely to themselves, and seemed to be never so content as when reclining side-by-side upon the doctor's lawn. The kitten of last winter is now a robust young cat, but the attachment has so far proven abiding. The case is one of exceptional interest to the many who have witnessed it. So "one touch of nature makes the whole world kin."

And I must tell a true story on the other side. It happened in the Old Country not long ago. A hen came off her nest with a large brood of chickens just hatched. She left one chick struggling to get out of

the shell. The lady of the house took the chick and hurt it by accident. Supposing that it must die she gave it to the cat, thinking it would kill it and so end its suffering. The cat had a kitten but a few days' old. To the lady's surprise she began at once removing the shell in the most tender way; and this done she put the callow thing by the side of her kitten, and nestled them together. An attempt was made to give the chick to the hen, but the old cat was so unhappy that it was restored, and her protégé grew up with her kitten.

I hope these Animal Memoirs will make the reader brighter eyed, hence more appreciative of Nature, as seeing her ways more clearly than before. A city friend was just now looking over the garden-fence at the old turkey in pursuit of a grasshopper, and was amused at his zigzag movements. The insect being caught was swallowed without any ado. Said I, "Did you notice that, having caught his game, he swallowed it without stopping to think? The bird is used to grasshoppers."

"To think?" reiterated my friend. "Is there any thing more in a bird's noddle than instinct?"

"Well," I rejoined, "let us see!" Then, having caught a large black beetle: "Here," I said, "is something new to that turkey. Now watch." I then threw it, so as to be seen by the bird. He went up to the black thing, then very deliberately put down his head and inspected the insect; then stepped back quite cautiously, then he approached, and stooping as before, again gazed at it intently. Not yet satisfied, he now

walked around it with a curiously cautious strut, keeping his eyes all this time upon the dubious morsel. Now his movement is quicker, and becoming assured he seizes the insect and it is swallowed at once.

"Enough," said my friend. "If that is not thinking, I don't know what is. I never saw more deliberate sampling of goods."

I have observed in the bear-den at the Central Park an old Bruin, who seems more philosophical than any of his brethren. If a newspaper rolled into a wad is thrown into the den he will appropriate it; and although he well knows it is at best an empty favor, he will carefully unroll it, and then gaze on the open sheet with an aspect of serious wisdom. Another bear comes up and seems desirous to look at the paper too. But that is not allowed, so there is a rough and tumble contest over the subject at once.

I think that here two points constitute the fun. First, the mock gravity of the situation,—that old plantigrade looking as if he were mentally delving for the news. Then at the same time he is brewing mischief; for well he knows that the other fellow will seek to poke his nose into his business, thus affording a pretty opportunity to administer a chastisement.

This study of Animal Memoirs should make us morally better. Though differing greatly from our own kind these lowly beings are really our fellow-creatures, since the same Divine Hand hath made us all. As their superiors, then, we should be their protectors. The late Henry Bergh, whose life was spent in a kindly championship of the helpless beasts, when a boy in the

city of New York, saw another boy ill-using a poor dog, and gave the oppressor a thrashing on the spot. The boy was father of the man.

To use the sentiment of another the study of animal lives should have an improving and refining influence on the mind. We learn thereby our true position in the household of Nature. And this knowledge makes one more merciful, benevolent, and modest in his intercourse with his own kind and with other creatures.

My young readers should know that the naturalist is made during the boyhood or girlhood of life. The habit of clear and industrious observation sets in when the taste for the investigation of nature has been acquired early. I hope, then, these little books opening up Nature's mines in the most familiar way, and in a companionable spirit, will yield wholesome returns.

The very young may be at times real discoverers though they do not know it, that being a fact which older ones only can recognize. When in former years I lectured on Natural History to the students in an educational institution, I remember that I was often gladdened by the contribution of some intelligent youth, a specimen he had found, or a new fact he had discovered.

One suggestion, in conclusion, regarding technical words. Every good technical word is pictorial. It is easy to call a certain animal a seal; and some will say — "Yes, and that is good English!" Well, grant it. But what do you mean by a "seal?" "An animal with flippers!" Yes, but a walrus, too, has flippers, and so on for the sea-horse, sea-cow, sea-elephant, sea-lion, etc.

Plainly, then, your good English is a plagiarist stealing from the land animals to get a nomenclature for those of the sea. Thus hath it been of old times; for even the Romans had to do likewise, as they called our little seal *Vitilus marinus* the Sea-calf. Now, surely, we can do better than this.

The Greeks had a distinctive name for the true seal, *Phoca*. The naturalist has adopted this word for the genus. But as there are several kinds of the true seals, each of which is divisible into other kinds with lesser differences, he has made several genera of the seals, and for each genus several species. Hence arises the need of a group name, — that is, a name that shall designate these genera as a whole or entirety. How naturally now comes the word *Phocidæ*, the Seal Group. And as to the one special seal we have been talking about, as it cries in the water like a calf, we get *Phoca vitulina*, the Calf-seal.

Now, if you will look this pretty creature in the countenance, you will see a likeness to the head and face of a high-bred spaniel. Hence, with what verbal daintiness did Cuvier designate the group as *Callocephalus*, the Beautiful-headed Beasts.

So all through our books the close context unveils these significant and attractive pictorial words. Hence, it must be that the verbal vision of the reader grows finer and more precise as he is carried along, if the instructor will but dwell a little on these words as they occur.

But I must not forget the story of the fence and the clover-field, — so without tarrying longer in the lane, let us now open the gate and go into the meadow.

CHAPTER II.

ANIMAL HUMOR.

"The heart is hard . . . that is not pleased
With sight of animals enjoying life,
Nor feels their happiness augment his own."

Nature of Animal Humor.



Y desire is to set in order for my readers a series of recollections of zoölogical studies. I wish to present a few biographies of animal lives. But the first chapters of my book will deal with animal traits in a general way, so that we may get a peep at the inner springs of conduct in these lowly lives. Hence these opening chapters are somewhat crowded exhibits of the exuberance or overflow of "animal mind." I indulge the hope in this way to awaken in my young reader the faculty of insight, so that he may be to the animal what it so often is to him,—"a discerner of spirit." For is it not too apparent that in this respect "the dumb beasts which perish" are often our superiors? In divining the mind of his master the dog rarely errs; and how subtle his discrimination of "the stranger at the gate." These mental manifestations indicate the one Maker of

animals and men. And is not this seeing the wonderful, when one beholds the Divine wisdom in nature?

> "She 's God's own mirror; she 's a light whose glance
> Springs from the lightning of His countenance."

No pessimist ever made much in the study of the life histories of animals. The student of such had better be optimist out and out. You will find the right ring in the quaint lines of the amiable and "saintly Herbert":

> "All things are big with jest; nothing that 's plain
> But may be witty, if thou hast the vein."

It was long ago that Cowper drew me into "the vein." The first poem that made my cheeks dimple with the ringing laughter of childhood was "John Gilpin." No musical toy could compete in my affections with the jingling jollity of that spurt of rhythmic fun and nonsense; and when told that its author kept three pet hares, — Puss, Tiney, and Bess, — he became established in my estimation as a right proper man. A maturer judgment has strengthened this love; for his classic hymns have afforded joy and comfort in dark and trying days.

With these lowly animals, as with "the higher folks," are all kinds of mental manifestation, — the gleesome and the serious, the pathetic and the sympathetic, the jocose and the morose.

There is a rough-and-tumble mirth enjoyed alike by dogs and boys. How much fun my own children have had rollicking with the dogs on the carpeted floor! Then I have looked at young men engaged at fisticuffs,

and compared their sport with the sham fight of a couple of dogs. How similar the progress and the wind-up with both. There is a canine contretemps,—one has bitten too hard, and there is a yelp. With the other party, one has hit too hard, and there is an outcry. Both couples wind up "mad."

But when the fun is innocent, hearty, and harmless, being fun simply, it is volatile. Hence it is observable as a rule with this kind of play, with both dogs and urchins, that, however high the glee, a very small thing will put it out;—an apple accurately thrown is sufficient for the purpose; instantly the effervescence is all over.

Young people ought to understand that between the owner and the pet there should be a mutual enjoyment of play, in the sense of gentle amusement and innocent fun. Old Sobersides did not like boys or girls, and averred "they cut up like colts." Well, I have seen young people enjoy themselves until they fairly cried over it; and I have seen domestic animals of high strain "cut up" as if they were beside themselves. Nor was it all animal spirits. There was a sense of fun with both master and beast, and the latter knew it. In fact, a dull or grum pet is poor company. But this is forestalling our subject.

CHAPTER III.

ANIMAL HUMOR. — MONKEY DIDOS.

The Oysterman's Monkey.



ONCE lived not far from a place where baskets were made for the use of oystermen. In the shop was a pet monkey which gave occasion to many an uproarious scene. In fact, all hands sometimes played monkey, the quadrumanal leading off, hunted by the bimanal ones, over and through the sinuosities of great heaps of oyster-baskets. The star performance was usually by the monkey and the apprentice, consisting, as the "posters" would put it, in "ground and lofty tumbling," — the monkey executing the latter, and leaving the other to the 'prentice. This would be kept up until the play became too rough, when the agile creature with a spring would be out of harm's way, clinging to the rafters of the building.

As an outcome of my studies, and not dreaming of any pedantry, I ventured to say that the specimen belonged to the family *Cebidæ*. This was promptly corrected by the apprentice, who told me that the Simmonses did n't own a hair in its hide. It belonged to the "boss's family." Happily, we were both right.

With a frown at the officious youth, an intelligent journeyman asked me for its scientific name. I said it was one of the spider-monkeys, and known as *Ateles Belzebuth.* Again the irrepressible apprentice interposed, "There *is* a good deal of Beelzebub in that little beast." To this came the journeyman's ready retort: "Bob, if there was less of that article in you, you would n't botch your baskets so badly." I merely added, that doubtless some sailor had brought the little fellow from South America, where it was known under the name Marimonda. As the smart boy seemed for the nonce snuffed out, I was able to answer a number of questions put to me by the workmen, one object being to awaken an interest in the poor thing that should go far to save it from ill treatment.

The wee thing was slim-bodied, and had a very long prehensile or twining tail. It was certainly a very grotesque-looking creature. Yet it was withal gentle and confiding, and brimming over with fun. It was quite fond of a good-natured romp with the men and boys, jumping from shoulder to shoulder, and casting around their necks that marvelous fifth hand, its prehensile tail. In tit-for-tat, tag-and-run, its agility and tactics were splendid. All this was very fine for a few days, or while the novelty lasted. But this good-natured romping soon became ill-tempered and vicious on the part of the shop-hands. In truth, erelong that sense of feeling tired set in which so soon falls upon many an owner of animal pets. Then followed heartless neglect. Cruelty comes with loss of interest.

At last from harsh treatment it lost all spirit;

and soon something happened which filled to overflowing its cup of misery. Marimonda was clever at catching sticks when thrown to her, which caused considerable amusement to the shop-hands. Now came a fiendish trick. One of them threw the hot poker to her, which she caught,—the burning shame! For a few moments the poor animal danced about, half wild with pain and terror, the shop in a roar of brutal laughter.

The poor thing now broke down, as if it had concluded to drop all sport forever. Not at all vicious, still gentle, but joyless, it became chronically sad. Though quite young, all its mirth had gone. I told them the little fellow's days were numbered; in fact, that they were killing it. It had lost all confidence in every one of them. In such an exigency how appealingly an animal will turn to some person whom it can trust!

I remember the last time I saw the hapless pet. Neglect was rapidly telling on it. The cold weather was setting in, and it had a cough, which sounded painfully human. As soon as it heard my voice it approached me with a trustingness that was very affecting. It attracted the attention of the workmen, one of whom said: "Just look at that! The beast won't come nigh any of us, and is always afraid of strangers; but see how it has taken to the minister from the first time it put eyes on him! It fairly whimpers when it hears him coming!"

All this was true. And for that whimper—it was a plaintive cooing, soft and flute-like, and not unlike the crooning of an infant. Pitifully true was

it, that whenever I called at the basket-maker's shop I was sure to be met with the love-greeting of little Ateles, — that soft cooing utterance of trustful joy. But there was so much painful melancholy in it, — for the wonted merry mood of little Marimonda had taken flight!

That there was real affection in that little heart I entertain no doubt. Its gentle eyes told all this so plainly whenever they saw me coming. Such manifestations could not be other than touching, they spoke so unmistakably of an implicit faith in me; and it was evident that it yielded the fruits of peace to that little trusting heart. I think that with animals as with men humor and gentleness go together; and if either survive the other, it is this gentleness that gleams after the other light has gone out.

I would not have it implied that this glinting towards the amiable attributes of man makes our monkey less simian; but I would insist that such qualities should not be reckoned brutish. Is it not these touches of nature that make the whole world kin? I never dared attempt to interpret the words of the apostle, — words so weighted with significance, whatever it may be, to every thoughtful mind, — "For we know that the whole creation groaneth, waiting for the adoption." Yes, trust is needed at the dark end of the journey. I have had a pet mouse creep into my hand to be hovered, and to die.

Poor Marimonda soon came to grief, — or rather to deliverance. A pot of green paint unintentionally set in the way proved too much for simian curiosity.

She ate of the pigment, and died in pitiful agony. This was dolorous tidings to me, and my temper rose to a spurt of indignation.

In a small glass case in my study are three diminutive skulls. One is about the size of an egg, and is cut from wood. It is what the ethnologists call a "medium long-head," and was probably meant to represent the cranium of the Red man. It was found in the old fort at St. Augustine. The second is a plaster skull as large as an ordinary orange. It is of the "round-head," or the Saxon type of skull. It was modeled by Canova, the Italian sculptor. When a boy I picked it up in Broadway for a Spanish shilling. The third one is a trifle the largest of the three; it is pear-shaped, and is a Cebian cranium. It is, in fact, the skull of Marimonda. I have just taken a good look at it, and these eye-sockets are anatomically beautiful. Even the dog has none such. All canine waggery is in the tail, but the monkey's eye is expressive. As to protecting bone and controlling muscle, the monkey's eyes are as well set and furnished as is the eye of man. The monkey's eye can express humor on three lines,—love, rage, and mischief. I call this little skull "Poor Yorick," and fancy an echo in these empty caverns, when I say: "Where be your gibes? Where be your gambols now?"

Jack and the Professor.

I once went to a distant city to see a learned man. As my friend was out I was invited into the study to wait. There I made the acquaintance of Jack, a monkey

confined in a strong cage. As his master said, Jack was a *Cebus*, and his proper name was *Cebus capucinus;* hence he was a cousin, so to speak, of our Ateles, the spider-monkey, as they both belonged to the same family, *Cebidæ*. Though very much more demonstrative, Jack had not the winning ways of Marimonda. His accomplishments were in another line. While the voice of Ateles was soft and musical, and in general her actions were gentle, Jack abounded in morose guttural gibberings, and vicious monkey grimaces.

I had never before seen Jack. When I entered the house he was moping sulkily in his cage. I approached and said, "Poor Jack!" at the same time extending to him both my hands. He took a finger of each hand of mine into each of his tiny hands, and as he held me thus he gazed into my face as a discerner of spirits might who is divining from the tone of voice and the light of the eyes. The query in Jack's mind was, "What sort of stuff is this new fellow made of?" Mental movements are sometimes marvelously quick, and that monkey's mind was made up like a flash. True, the beast had taken a searching look at me; but after all, the recognition was intuitive. He had taken the stranger's measure at a glance, and we were friends at sight.

Jack's owner was a learned naturalist, who on entering the room, and finding me toying with the dangerous brute, was startled, and his first impulse was to call me away; but restraining himself, the savant looked on in astonishment.

"You are the only one," said the wise-man, "that

Jack has ever taken a liking to at the first glance." Then of a sudden my host set up a terrible to-do, as if he would have me torn to pieces, crying, "Go for him, Jack! Go for him!" But Jack looked perplexed, as he evidently liked me, and disliked his orders. He still held me by a finger of each hand; and it was plain that he would rather go *for* me than *go* for me. Again, however, the master shouted excitedly, "*Go* for him, Jack! *go* for him!"

So Jack, in obedience to imperious command, *went* for me, shaking my hands by the one finger which he held of each as if he would impress me with the fierceness of quadrumanous anger. And how wide open he kept his mouth, — and how the white teeth shone as from between them rushed a torrent of gibbering rage!

Considering the shortness of the manager's notice, this perfunctory tempest was exceedingly well gotten up. That is to say, Jack's part was well played, — for of course it was the merest sham, — but it was the best make-believe anger I ever beheld. I have a boyish recollection how the elder Booth stirred the "pit" to its depths when in the "very whirlpool of passion" he "went for" Richmond. If great and small things may be compared, Jack in his rôle was equally grand, for when he "went for" me the mimicry of simian rage was well-nigh sublime. Angry indeed! The creature would not hurt a hair of my head.

His owner's commands obeyed, he was now at liberty to turn his attention to me in a friendly way.

He made an amusingly minute inspection of my hands. Was he comparing them with his own? Who knows? He examined the few hairs on the back of them. Then turned a hand over, and gave close attention to the lines in the palms. Of course it could only be in semblance; but the sight was so grotesquely grave,—as it might be a gypsy manikin practicing palmistry!

Jack could catch with either hand a nut thrown to him, and crack it with a stone as deftly as any one. How is it that so often our very kindnesses to our pets take on an experimental shape? We are curious to see "how they will do it." In this way Jack had his full share of the "tribulations of inventors"; for his owner was a man of science, and as such addicted to experimenting.

So Jack once had his patience put to a strain by an obstinate black-walnut. It was a toothsome bit, but in a tantalizing sense; for it tried his teeth severely,—in fact, defied them. His mistress put a large stone within his reach. He seized it eagerly, but it was so heavy that he could not hold it in a stooping position. Having placed the nut on the floor, he took the stone in both hands, and set himself nearly upright, so as to balance the great weight. This done, with the nicest aim down came the stone upon the nut, which it fairly smashed.

But if any one desired to evoke the animal's genius, it was only necessary to put a few nuts on the floor, at a tantalizing or inconvenient distance from his cage. On such trying occasions he was

allowed to have a stick and a small rope. First, the stick would be used ingeniously; but if his best efforts thus failed to draw the nut within reach of his hands, the rope would be brought into service. Doubling the string, so that the middle served for a loop, it would, after a number of efforts, be thrown over the nut, and thus made to lasso in the prize. Some nice reckoning there!

One day the professor had a call from a gentleman with a bald head. Jack regarded the visitor with unfriendly wonder. Even monkeys appreciate resemblances. An Aino, or hairy-man, would be a simian Adonis. But as for this person with the hairless head, why should he be less like him than other folks were? Did not every other man that he had seen have hair on his head, as every properly gotten-up monkey had? Did it not look like an invidious distinction?

I fear if Jack had been gifted with speech, like a son of Belial he would have said to the old gentleman, "Go up, thou bald-head, go!" And as it was, his eyes did speak things not lawful to utter; for the fellow was surly, and in no reverent mood. After some coaxing by his master, and perhaps some incitement of appetite, he did show off his accomplishment in the rôle of getting the nuts off the floor, much to the delectation of the bald gentleman.

He was next ordered to "go for" the gentleman, which command was executed with alacrity and spirit; in truth, he shook the bars of his cage in savage fury. There can be no doubt that, but for the re-

straint of those bars, that paroxysm would have resulted seriously to him of the hairless scalp.

Turning his back to the cage the old gentleman with some formality addressed his host: "I find myself unable to comprehend what the animal means by this hostile attitude towards a friendly stranger. His dexterity with that stick and cord is really remarkable. Ah, well, this matter of animal instinct is truly wonderful, if not beyond our understanding. You may depend upon it, professor, this little beast is capable of even stranger and unlooked-for developments."

In the main the old gentleman was correct, discoursing better than he knew. But whether that droll creature was affected by the compliment is not for us to say. As already almost hinted, Jack was not a reviler of the prophets. But then how inexplicable the incident, that at the very moment of prophesying, the rough stick used in getting the nuts off the floor was upraised, and brought down with intense anger upon that glistening pate! It did look as if Jack thought, "Let me 'put a head on' that flatterer!"

The gentleman's feelings may be imagined, but cannot be described. Up rose a livid spot, strangely similar to a fungus on the shining bole of a birch-tree, upon which excrescence, like a soothing poultice, one hand was tenderly placed by the sufferer, as he said pathetically to his host, "This is a painful development!" To this the savant added dryly, "Very strange; and so unlooked for!"

As the fable puts it, "What was fun for the boys was death to the frogs," so this sudden spurt of malicious mischief so distressing to its victim was to the spectator irresistibly funny. In truth, the learned professor rather enjoyed the mishap of his visitor. It is certain he did not lecture Jack on his evil ways. If the droll beast could have put the affair into words, it would have had the brilliancy of wit. In pantomime, such a scene would bring down the house like a hurricane. Is it supposable that Jack was unconscious of the fun? I do not think so.

The Monkey Tease.

It seems to me that the most human side of a monkey is his disposition to tease. In this some of them are inveterate, ever twitching at the tails of their more peaceable fellows. Surely it is all for fun; but is it not a vice? Has the human teaser anything against the object of his persecution? Usually he has not. He would even do his victim a kindness upon occasion. And yet though at times brimful of good-nature, this persistent paradox of cruelty seeks pleasure in the infliction of pain, and is "only in fun."

Along the highway, within sight of my study, is a field. The ploughboy whistles as he treads in the turned furrow, happily ignorant of the shocking tragedy enacted there in the name of justice, long ago; for in that place a poor slave, never more than "half bright," was executed.

As the law phrased it, the hapless wretch "had

committed murder." But the story is brief, and perhaps instructive. In the neighborhood lived an habitual tease, and the negro was his especial game. At any time and in every place, — on the road, in the store, or the hostelry, — he would get the laugh on his victim, who would so far forget himself as to sputter in rage. Finally the temper of the man was exasperated to such a degree that it rose to white heat. Like a flash came the one blow by which his tormentor was slain. And all this came of sport!

Is it not noteworthy that the fun of animals is chiefly got at in sham-battles, amid the roar of mock anger, and sometimes having a wind-up of the real thing? Boys too often love to tease and worry animals, and not less one another. It is with the same impulse that a boy ties a tin pan to a cur's tail, or pins something on a playmate's back to annoy him; and from the same source come tripping, and sparring, and knocking the hat down over the eyes. If motive be the gauge, how fine the line between much of boyish roguery and monkey mischief generally! Ateles played tag, and Jack attacked me in fun and the bald man in earnest. On the doctrine of identity, our illiterate neighbor spoke more astutely than he supposed when he bade a teasing wag not to cut up any more monkey didos with him.

Who has not seen in some men a humor of an inhuman sort, — a Satanic sense or relish for torment and destruction mixed with better traits? Jack had this monkey malady in streaks. Once when his master and mistress were from home he got loose,

and found his way to the closet of sweetmeats. A few minutes sufficed him to eat to satiety; then the pure viciousness of the beast showed itself. He took the precious sweets from the jars and threw them about the floor, seemingly everywhere. He even daubed them on the elegantly papered walls of the drawing-room. Oh, was not this the very delectation of fun? "A melancholy scene!" did you say? It was, in Miltonian phrase, "delectable both to behold and taste." Then came the smashing of glass and china, — a most exciting performance. The scene of operations was now changed to the museum and study of the naturalist. Here he discovered a rich and novel field in which to exercise his peculiar talents.

The professor is an authority on all reptilian forms of life. It is but recently that naturalists made the discovery that they had been perpetrating some queer mistakes in regard to several of the water salamanders. Just here is not the place for technicalities, so I can only say that certain salamander larvæ, or young, that is, undeveloped or incompleted forms, were supposed to be adults, and as such had their scientific names. Certain other forms also had their systematic names. Now, on patiently watching the first through all its changes, it was found to develop into the latter. Here, then, was a gross error; as if a boy well known as Joe Black should when man-grown be known as Bob White. Of course one of these salamander names had to be dropped, that of the young form only being now acknowledged.

The discovery of the identity of the same individual

in the larva and adult form was made by Professor O. C. Marsh. But scientific men like to repeat the experiments of others. Hence a similar investigation was under progress in the laboratory when Jack entered himself as a new student.

An aquarium contained a number of living salamanders. Jack began an investigation. He is curious about live things. If in the present instance vivisection was intended, it was very bunglingly done. Each one was taken out of the water, separately examined, its head twisted off, and head and body laid upon the floor. With the last salamander Jack's demonstrations ceased. He had exhausted his material.

I know not whether the mischief done was fully up to his heart's content. He could have turned from Biology to Palæontology, as there was great store of fossil bones at hand. But he had had a tearing time, and was tired, and may be surfeited, with excess of opportunity; moreover, he heard his master's footsteps. So he retired to the shelf in his cage, where he sat looking the image of demure and passive harmlessness. The great man beheld the promiscuous desolation, as one who is dazed by disaster.

I think this heartless wantonness so general in monkeys has its counterpart in many a boy. The urchin who burnt the cat, when asked why he did it answered, "Only just for fun. I did not mean anything." Is not this grim humor a phase of depravity common to man and beast?

In regard to Jack's lassoing the chestnuts on the floor, I do not see, with an able thinker, who has

commented on my statement, the necessity of his inheriting the trick from an ancestor, who in his native forest had the knack of employing a vine, or flexible twig, to loop in some coveted fruit which might be far out on the tree. That Jack might have had a great-grandfather clever enough for this we may not dispute. But that he had an ancestor similarly held in limbo, similarly necessitated and tried as he had been, is far from probable. With animals and men, necessity is the mother of invention.

Is it not more likely that Jack, with no thanks to any ancestor, was thrown upon his own resources, and had to exercise his wits in an original way? We had a Coati-Mondi, which showed a similar dexterity. Each of these animals was thrown upon his own genius, or cleverness. Coati and Cebus had each to solve the puzzle for himself. However easy it might be afterwards, it was at first an invention.

The kleptomania of the corvine family of birds is notorious. Tame crows and jackdaws will pilfer on passion, and have secret places in which they hoard their useless loot. On this line the record affects quite unfavorably the morals of monkeys.

It was at a visit to the study of that genial naturalist, Frank Buckland, that the following occurred. Among his many pets were two monkeys, one of which was the pretty but not uncommon green monkey of India. The animals were in a cage. Seeing a carrot, I asked if I might give it to them. Mr. Buckland, smiling, said: "As a gift they would n't thank you. They prefer to steal their food if possible.

Now, take the carrot and handle it a bit. Ah, they are watching you! Now sit down by me and lay the carrot on the table close to you, — only don't turn your face to them."

I did as directed. Then Mr. Buckland, calling to his boy, ordered him to open the cage door. This was done, and soon out came the monkeys. It actually seemed planned between them; for the green monkey, — not at all verdant, as I soon discovered, — led the way sneakingly, and all the time eying me. When within jumping distance of the prize he stopped and looked wonderfully innocent, as if to blind me in respect to his intentions. Then came the spring, and the carrot and both monkeys in a trice were on one of the high shelves of the laboratory, munching at their booty, which being stolen tasted good.

"How," I asked, "will you get them back again?" for I had begun to expect disaster among the specimens on the shelves.

"That is easily done," said Mr. Buckland. "They have a wholesome dread of a broom. A mere shake is sufficient." Saying this he ordered them back to their cage, at the same instant making a feint of going at them with the broom. It was indeed enough. Both miscreants sought their den with the speed which terror inspires.

This pilfering propensity of monkeys is often the occasion of laughter, as I witnessed in the monkey-house of the great London "Zoo." There was a notice up cautioning against going too close to the cage.

Albeit the warning, I saw a short-sighted man craning his neck over the railing to get a close inspection of the monkeys. In a moment one of these impersonations of mischief was down, and had the poor gentleman's spectacles in possession, and was back again to his perch, where he examined his booty with the utmost gravity.

It was a pity to see the poor man's embarrassment. The keeper came to his aid, and with his whip entered the cage, when the thief dropped the spectacles, which were returned to their owner,— though in a very fragmentary condition.

And now came the sequel, which, like the denouement in any well-managed entertainment, was the most amusing part. A woman, evidently not highly refined, with a profusion of cheap artificial flowers on her hat, so enjoyed the confusion of the poor gentleman over the ruin of his eye-glasses that she gave vent to inordinate laughter, which she seemed unable to control. Going too near the cage, and lowering her head, as if to conceal her hilarity, the same impersonation of mischief made a descent on that floral display with a resulting wreck of millinery which changed the laughter into a scream of feminine distress. The monkey was allowed to retain his spoils, which soon were in a thousand bits on the floor of the cage.

I saw but a few days ago a number of South American monkeys on sale at Reiche's. They were of the same species, and all quite young. There was one, who, without any physical superiority that I could

see, was the king or tyrant. It mattered not how full he might be, it seemed to him a luxury to get a morsel by stealth. And although he had eaten to a surfeit of food supplied in the regular way, he must top off with a pilfered bit; so knocking down one of his subjects, compelling him to open wide his mouth, he would abstract the coveted morsel, and transfer it to his own maw; which done, his meal was complete, and he would mount his perch to ruminate in manifest peace of mind.

But enough has been said for the monkeys; so they shall be left while we consider other animal manifestations of a kindlier and more congenial character; for in monkey humor amiable traits do not predominate. We miss affection and devotion, qualities so eminent in some animals as to be worthy to rank as virtues. I am sorry to say that, though Jocko can be very entertaining, he can hardly be deemed lovable. He will look trustingly to his mistress when hungry, but her bounty excites no gratefulness, and the attachment weakens when she has appeased

"The keen demands of appetite."

True, he will prefer his mistress to all other persons, because she is considered a protector. He is a pilferer on passion, and his temper is capricious. One with winsome ways is exceptional; and I have known that tiniest of monkey midgets, a Marmoset, to bite the hand that fed it, and chatter querulously as if ill-humor was ingrained.

CHAPTER IV.

ANIMAL HUMOR. — CANINE CUNNINGS.

"Three or four gentleman-like dogs."

FROM a boy up the writer has held companionship with dogs of many kinds, both small and great. Every one of them had its individual character, — "the little dogs and all, Tray, Blanch, and Sweetheart." Each one in kind or degree had its own virtues and failings, its own levities and gravities. Were but the half written that I could tell, it would make a book. A few recollections shall suffice. And first, —

Dick, our Black-and-Tan.

For striking contrasts of fun and pathos I would commend to you our young dog Dick, a medium-sized "black-and-tan." On his mother's side he was high-bred; of his father less was known. The one composite word which expressed the mental make-up of the animal was *whole-soul-ed-ness.* When Dick set out for a frolic, all his powers were enlisted for the occasion. There was nothing perfunctory in his nature. Whatever he went about he gave his whole mind to.

At make-believe anger no canine could excel him, and I have never seen his equal. I would set him on his mistress, to whom he was devotedly attached. He would leap at her as if meaning serious business; would take her bare arm into his mouth and feignedly pull and tear. The savagery of his growls was in truth too highly colored; but it did help out the play of ferocity. Had Dick been man instead of dog his theatrical rôle would surely have been a pirate, buccaneer, bandit, or some such melodramatic marauding man of blood.

In the bathos of tragic swagger, or the pathos of the impossible, Dick was perfection. He rolled the gutturals with such grandly intense effect! A stranger entering during one of Dick's tragedy fits would have thought his mistress a doomed woman. Make-believe mad! That dog could simulate "the very torrent, tempest, and whirlwind of passion." And it would be simply a doggish joke; for when the splurge was over, not the least mark would be on my lady's imperiled arm. Now it is notable that in real fights, though terrible, the noise of his rage was mild compared with that of these sham contests, in which he would "tear a passion to very rags."

Dick was entirely self-educated. Not one of his many accomplishments ever came of training. He was "the flower of the family," his brothers and sisters being less gifted. Hence I thought there was originality in his doggish humor. Even the children would show him off. "Now, Dick, let's see you laugh." And laugh he would, puckering up his mouth and

displaying his ivories. So droll were these canine cachinations that the laughter of the spectators was irrepressible. He would stand up to the table, putting his forepaws on it; and when told to do so, would make a feint of a baby cry for a morsel of meat. The imitation of the baby's whimpering was very amusing.

In all these manifestations Dick had his faculties well under control, even to a degree seemingly ludicrous; for he could end and offset the gayest frolic with a sudden sedateness of bearing. What seemed the very abandon of play would close up in a serious comportment, as if something weighty had occurred to his mind. This faculty in the dog of putting extremes together so very unexpectedly sometimes proved annoying, as it led to professional embarrassment; for the master soon found himself the object of unpleasant comment upon the street.

If permitted to accompany me on a village stroll, he would walk behind with the staid deportment of a footman of the olden time,—not in a servile spirit, however; for Dick was not "an hireling," but with a sort of serious sobriety, as knowing his place, and keeping it in a becoming manner. But let another dog come along and look at his master, and brush him ever so lightly with his tail, and he would fly at the offender, whatever his size, with a ferocity that counted no cost. If Dick was small, he was spry and wiry, and generally the chastisement he administered was short, sharp, and decisive. If it were a large dog, Dick would attack him scientifically.

He was agile as a deer. If the subject for correction was one of the heavy-weights, Dick would spring into the air, and descend upon him with a bite in some unexpected place in the upper regions, his complicated tactics and rapid evolutions begetting in the mind of the burlier beast a perplexity like that of the Iron Duke when he beheld the strategy of the little Corsican: "Hang the fellow! he fights contrary to rule!" So our light-weight Dick, though by nature true as steel to his friends and punctilious as to the proprieties, when matched against a heavier foe he was tricky in tactics; in fact, a veritable backbiter. In a word, to his canine conscience all was fair in war.

Dick was the self-constituted guardian of the establishment, and the presence of a strange dog on the premises was not to be thought of. One day two big fellows were espied in the garden. The little one went for them; and, depending on a combination of muscle in mass, they went for him, but could not find him! His movements were so rapid. He was now up in the air, and anon in sharp practice upon the back of each bully in turn with bewildering celerity. So terrible was the little vixen's back-biting that it would damage a fighting character of a high order, and it was little wonder that the combination of brawn against brain broke and fled in precipitous dismay.

For a preacher of peace this state militant was too inconsistent to be other than unpleasant. In plain words, Dick's solicitous attention to his master's personal welfare, though in spirit admirable, through his way of doing it had become to a degree oppressive,

as the minister's good name was now associated with some notable canine contests. What would you think of the *Village Chronicle*'s going out of its way to wind up a dissertation on Village Dog-Fights thus?

"As regards this well-fought contest between the expressman's big dog Whitey and the little Dominie in black, all must admire the dogged valor which gave victory to the latter, and sent the former from the field of conflict with a sad curtailment of his high prestige. And we cannot but compliment the reverend gentleman on his being possessed of so large an amount of fighting capital as the outcome of so small an investment in dog-flesh. The next time the little Dominie in black goes in, our wish is that of Cowper in 'John Gilpin,' 'may we be there to see!'"

Of course such ethical whisperings from so immaculate a source as the public press must be heeded. The pastor and his "black-and-tan" had been unconsciously attaining an unenviable celebrity.

Having occasion to go to the railroad depot, I took the precaution to shut Dick up. But love laughs at locksmiths. Dick was at the station as soon as his master, and occupying his usual place behind him. On came the train. A village mongrel, notorious for its habit of following horses and barking at them, came yelping defiantly at the iron steed. We stood waiting for the train to stop; this done, the bully dog retraced his steps to the platform, his tail wagging, expressive of satisfaction with his attentions to the great fire-fiend. It was evident that Dick, who had kept close to my side, viewed the whole performance with

disgust, and but for what followed it would have been treated with silent contempt.

Generally dogs take to me on sight, whether from the "cut of my jib" or intuitively I cannot say. It may be that personal magnetism has its influence; for the big bully dog came to where I stood, and seemed by his conduct to be claiming my approbation. With this Dick lost his equanimity, regarding it as an imposition on his master not to be allowed, so he must administer chastisement. The bully dog was much the larger, and stood his ground for a few moments; but the punishment inflicted by Dick was very severe, and Sir Lofty withdrew in a very humble mood. Our efforts to take Dick off were of no avail. He never would leave a job unfinished. There was some clapping of hands; and although a good deal annoyed, we yet harbored a little concealed pride, which was somewhat damped by a mongrel specimen of humanity in the crowd, who cried out, "Good for the little Dominie in black!" The fellow had read "The Chronicle."

Dick's talents were developed precociously. While but a very young dog he had done things in behalf of "sweet charity" which should have won for him the Humane Medal. One of these acts was performed almost ere he had completed the shedding of his teeth. It was so touching, that if done by a child it would have called out an encomium.

Says Dr. John Brown, the hearty and delightful writer on dogs: "I think every family should have a dog. It is like having a perpetual baby; it is the plaything and crony of the whole house; it keeps them all

young; and then he tells no tales, betrays no secrets, never sulks, asks no troublesome questions, never gets into debt, never comes down late to breakfast, is always ready for a bit of fun, lies in wait for it; and you may, if choleric, to your relief kick him instead of some one else who would not take it so meekly, and, moreover, would certainly not, as he does, ask your pardon for being kicked."

All this were our dogs to the children. But at this time their one particular crony and companion was Dick. He and our little boy were engaged in a rough and tumble contest on the kitchen floor, the young dog making the most of his opportunity to maul his young master, without hurting him.

At this juncture, and when the glee of this gambol was at its height, Maje, the old black-and-tan, now blind and decrepit, was observed by Dick standing at the door, waiting to be let out for his morning airing. The day was very cold, and the ground was covered with snow which had fallen in the night, and was the first snow of the winter. All this the young dog knew, but old Maje did not, and the poor fellow was helpless, being stone-blind and deaf. So the young dog, who took in the whole situation, withdrew from the frolic and devoted himself to the care of the old animal, lest from infirmities he should suffer by undue exposure to the suddenly inclement weather. Now just think what all this implies! Allowing the dog-mind to work in this matter, as would the man-mind, — and what other way can be supposed? — then are there not some fine points in this

benevolence of the young dog? I must say, too, that these self-imposed benefactions of the youngling were often repeated.

I must mention another though similar instance of this young dog's kindliness, as showing self-sacrifice, because it excited in us who watched from the window both amusement and admiration. Though there was no snow, the day was extremely cold. The old dog wanted to go out, and Dick, of his own accord, took charge of him. I verily believe that the conception of the young dog was that the old one stood in danger of getting frozen from inability to find his way back to the house. But the old fellow, who did nothing but eat and sleep, was as fat as a bear about hibernation-time. He fairly waddled with his load of adipose tissue. Not so his youthful guide, who was wiry and lean from incessant activity. Now old Maje, feeling no discomfort, but really enjoying the frosty air, was in no haste to return; but poor Dick stood shivering with the severity of the weather, and actually whined in his impatience to get his charge home again. Still, notwithstanding the provoking insensibility of the old dog, his young benefactor did not leave him a moment until he had him safely housed once more.

"And," says the objector, "what has this last to do with humor, pray? Why it's almost pathetic, more touching than funny, I should say."

Well said. You have made a good point, my friend. But, then, true humor is sometimes tender as sweet charity. Do you know there is a laughter

which, though it ripples not the face with smiles, neither shakes the cheeks nor sides, yet does set going a bubbling in the heart! I have seen a child smiling through tears; and it was sweet indeed as apple-blossoms seen through the mist of a May morning. We do not yet know much about the "nervous centers." The springs are still hidden; but do we not see the outcome of their being touched? The play of the muscles, and the soul-flash at the eyes. To the skilled colorist belongs the impressible witchery of tints. On that emotional canvas, the "face divine," cannot we see that the tracings of humor and goodness are in blended tints within the same line!

Two other amiable traits of Dick must be mentioned in brief. First, fealty. Though it seem uncouth I have no better phrase,—he was cannily clannish. He would not hurt any child, even though a stranger. But he was loyally jealous of the rights of the children of the family; and it was amusing to see his worry whenever his mistress took the infant of a friend on her lap. His canine sensibility seemed wounded by the impropriety of the act; and how intently and pleadingly he would look into her face, the very picture of entreaty and distress! Finding all this of no avail, he would then push the intruder with his nose, as if to dislodge it from the maternal throne of right belonging to his baby master. When the child was given to its own nurse, and his mistress took her own upon her lap, his relief was exhibited in a way so pronounced as not to be mistaken.

And albeit this clannishness, the noble little fellow could be generous, and even magnanimous, to a strange child. Upon occasion among our visitors was a little girl who took to our pets at once, at every visit. But, as it often is with children, she teased them, and even hurt them sometimes. Dick being among children a non-resistant got more than his share of this persecution. It happened one day that for an act of disobedience the father of the child was about to punish her. This so distressed the generous dog that he thrust himself between the child and her parent, and remonstrated in a threatening way. But that threatening, it was simply diplomatic, and meant to be tentative and preventive. As a phonic effort it was a queer performance, for it had in it as much entreaty as threat, — being a concoction of bark and whine. And a capital tonic it was for a disordered condition! The offended father took it all down at one dose; and his emotional derangement was quieted. As the nostrum-men have it, "he was a new man."

Much more could easily be said of Dick, in whom shone all the cardinal virtues, — affection for and devotion to the family, and in an admirable degree loyalty to his master. And when it came to the exercise of this most serious function, the guarding of his liege lord from the impertinence of other dogs, the display of these qualities which all admire was really grand. There was the courage against all odds, a wiry endurance and a skill of the highest order. He was truly a dog of promise; for almost every day brought a

fresh surprise at something new in his conduct. He had that quality which is great even among men, — an untiring alertness for opportunity.

But Dick's noble career was brought to a sudden close. The dog-days had come, and a price was set on all dogs equally, whether of high or low degree: "50 cents, and no questions asked." The job was undertaken by two negroes notorious for their nocturnal knowledge of all the hen-roosts throughout an extent of country. And they had tact for the business. One carried a short, smooth club, and the other a rope with a noose. The club was hurled with a whirling movement along the walk or ground, and with such force as to take an unsuspecting dog off his legs, if it failed to break them; when on the instant the other fellow would be up, and have his noose on the animal's neck, and both would drag off the resisting but choking thing to its ignominious end.

We had seen the two fellows prying around our premises, and precaution had been taken to keep the dogs out of danger. But Dick had eluded our efforts, and gotten into the street, and was captured, taken to the pound, and executed ere we could know the facts. Poor Dick! How undeserving such a fate! But my pen must stop. My brain is seething with indignation as I write; and if the flow of utterance were equal to the torrent of feeling, what imprecations would leap into words! In such a rush of emotion I cannot but approve the sentiment of the French woman, — though I do not recall her name, — who said: "The more I know of men, the better I like dogs."

Major, our Newfoundland.

A highly aristocratic dog was our Major, our Newfoundland. A large, handsome beast, with a heavy black, curling pelt. He came to us in a somewhat romantic way; and for a while such was his puppyish destructiveness, that it became a trying of all patience to put up with his infantile iniquity. A widow friend brought the young beast with the pleading request that we would take care of it a little while, — which "little while" extended through seventeen years, or until the dog gave up the ghost. Our friend was receiving the attentions of a major in the service, and as she had a son, a small boy at boarding-school, the suitor bought the pup for the lad; but the principal had ordered it to be returned as a nuisance not to be put up with.

From the above may be seen how the pup got its name, and why it was put upon us. If tied up, its incessant cry was distressing; and if let loose, its destructiveness knew no limitations. The flowers would be scratched up, the vegetables chewed into bits, and the furniture badly injured. Nothing escaped on which it was possible to set his teeth, sharp as chisels. We had an old-time chair, an heirloom, made of hickory, and it seemed to us that age had hardened it into iron. The little beast got a chance at this antique, and actually gnawed through the rungs! I now felt that patience had ceased to be a virtue; but through the intercession of his mistress the animal always escaped punishment.

The pup was the playfellow of the one-year old

baby. Their development went on together, and it was interesting to note the similarities. We were at first somewhat fearful of the dog's sharp teeth, and his habit of trying them on everything. But in due time he got out of his puppy ways, and took on the dignified bearing of a gentlemanly dog. As showing solid sense, it should be mentioned that, though the baby took liberties, and even went the length of pushing his little hands into the animal's mouth, it never hurt the child.

Of course as with other parents each new way of the child arrested our attention, and the same was occasionally true of the young dog. It had not yet learned to bark, and must have been about six months old. Yet it had a whine, and a cry that might be called a howl. One Sunday the baby and the pup were at play on the floor. The dog was in great glee jumping upon and making believe bite the child, the latter enjoying the fun, and laughing until the tears came.

On a sudden the pup emitted a bark. It was loud and deep. The child was amazed, and seemed upon the verge of crying from fright. The dog got uproarious. It was astonished and delighted with its new faculty, like a boy that has for the first time learned to whistle. The little beast seemed bent on a prolonged exercise of its gift, entirely unmindful of the meditations of the young gentleman upstairs "preparing for the ministry," who from the landing uttered an angry remonstrance against the unseemly disturbance. The piety of the young theologian was pronounced. But Maje talked back; and the student closed his room-door demonstratively, and in despair.

Some of the wild dogs are voiceless, — that is, they cannot bark. Is barking one of the results of domestication? If so, how varied is this accomplishment, and how wide the difference of the bark in the different breeds. There are individual variations. In a large household, no two persons have their voices keyed exactly alike. It is averred that the barn-owl, which in Europe loves to lodge in the towers of churches, is fond of the "music of the bells." I have seen dogs wonderfully affected by music, — pleasantly, if there was no discord or harshness, but otherwise unpleasantly.

My little boy, unfortunately for Major, found out this idiosyncrasy, and for his amusement often practiced on the poor animal's susceptibility to this torture of discord. He would take a comb, lay upon it a strip of paper, and breathe through it, extorting strains of dismal melancholy. The beast would rise on his haunches, raise his nose in the air, and accompany the sound with outbursts of howling distress, starting with an explosive loudness and sinking almost into a whisper of agony. Though excruciating, the drollery of the performance was actually exquisite.

Major's play, in consequence of his newly developed ability, was for a while too uproarious. But the novelty gave way in time, and a becoming sedateness set in. The animal grew up to be a large, handsome beast, with very aristocratic airs. He literally stood upon appearances. As we were living in a collegiate town, Major took very kindly to the students; and put himself upon them in their rambles, always, however, coming promptly home when the walk was over.

The animal made a distinction even among the students. A college student could enter the gate before our house without having his way disputed; but if the student were from the Theological Seminary, or if the caller were a minister, he received a special welcome from the dog. Clergymen, whether full-fledged or inchoate, were recognized by Major with special respect. But for ill-dressed persons he had a marked dislike; and as for beggars, or any suspicious persons, his hatred was dangerous, and upon several occasions caused us some serious trouble.

For one of the seminarians Major showed a special fondness, although he never, like some of his kin, allowed a new attachment to weaken his proper allegiance. With this student he went out on a walk quite often. It was about five years afterwards, when we were living at a seaport, and during which time none of us had seen the young man above mentioned, that lo! the dog brought him to our house. The animal had been off on a stroll with some other dogs to the steamboat dock. There was a great crowd, and when our young friend landed in the throng, Major nosed his way through, rubbed against the young minister, who at once recognized him, and said, "Go on, Maje, and I'll follow!" And so the animal did; keeping right before him, and observing a proper pace, he brought him to us.

How did the dog recognize the young man? It was by that fine faculty of scent. But what a feat of memory is implied in this! for about five years had passed, and he distinguished the odor of his former acquaintance.

The dog's regard for the "cloth" was remarkable. On one occasion, in the latter part of summer, we shut up the house and took a stroll to a wild vine which was prolific of grapes. The fact that the entire household were out, including the baby, made it a great occasion for the dog, and the animal enjoyed it highly. We were out of hearing of the house, but it seems that it was otherwise with the dog, who, without our noticing, had disappeared. Soon he was seen returning to the party, and bringing with him a young clergyman. He had heard him knocking at the door, and the stranger said that the gentleness of the great beast, and his intelligent action, told him plainly enough to follow him, and he would be led to his master, with whom he had business.

The dog was thoroughly trusty. Our church was several miles away; and though a bad example was set by the dogs that accompanied their owners to the Sunday service, it had no effect on Maje. His concern was to stay at home, and guard the house when all were gone to church. Besides, he knew well that he had no business in such a place. What the dog-mind understood by a church we may not find out — beyond this one fact, that it was a place where the minister met the people, and in which dogs had no right to be present. But when we were returning home he always met us at a fixed spot about five hundred feet from the house, and we could hear him start. There was a loud bark of joy, and a spring from the house-stoop, which told it all; and the dog in a few moments would be seen bounding down the lane, to the special delight of the children.

I never knew but one bad trait in the noble fellow.

When dogs take to evil ways, as with men, their very smartness sometimes betrays them. My good wife was rightly proud of her success with her hennery; and Maje had accompanied her so often, that he knew as well as she where the eggs were likely to be found. Circumstances led to the suspicion that Maje, trusty as he was, was not immaculately honest at all points, — and that he drew the line at eggs, of which he would appropriate one, not often, but "semi-occasionally," as a neighbor said. As we never caught the dog in the act, I was for a time unable to devise any method of curing the fault. But the opportunity came in a very unexpected way.

One day his mistress remarked to her mother that the supply of eggs had been so small she was sure that the hens "were stealing their nests in the orchard." So a hunt was proposed, in which the two went, Maje of course accompanying. The result was the finding of a large number of eggs.

The next day Maje came to mother, evidently in great excitement. She understood that he desired her to go with him. So she said, "Go on, Maje, and I'll come." That was enough. The animal wanted to go to the orchard. He would have made a bee-line for it. There was a good reason why madame did not care to go that way: it would require a little climbing over the wall. So he led her down to a broken gap in the stone fence, then up again on the other side of this wall, thence into the orchard to an old tree with a hummock of deep grass close by, and pointing his nose into it seemed to say, "See what I have found!" And sure enough, there was a fine large egg! Taking it out

with one hand, with the other she affectionately patted the sagacious beast. As a result we all took it to heart that we had been libeling the good dog.

In the course of the day mother said she would make a cake, and the egg that Maje had found should go in. I know not how many eggs were broken and dropped into the bowl, but the last one was Major's. It went in souse! not as a sphere of semi-fluid gold like the others, but an addled mass of corruption. The dog by his superior scent had found out that the egg was bad. Of course it was not worth stealing; so he would play honest, and report his find. My plan was now laid. The next morning we had eggs for breakfast. Not a word had been said to the dog; but I requested that while we were breakfasting one egg should be left in the boiling pot. The meal over, the egg was taken out. Tossing it from hand to hand to prevent its burning me, I said to the dog, "Here, Maje, this is for you!"

The animal seemed half wild with delight. An egg to be given him! such a thing had never happened. I then sent it rolling fast down the sloping sward. Buoyant with expectation, he ran and took up the treacherous thing with his mouth, but dropped it instantly. And wonderful was the change of expression on that countenance! First the eyes shone with expectation, then for just a moment came the dash of chagrin and terror, which in an instant changed to a strange look, under which he slunk away. It was not upbraiding, as if meant to say, "Master, that was too bad!" It seemed to me rather of shame, as if saying, "I am found out!"

As the mother often is to her children a screen from their wrong-doing, and a shield from the consequences,—and in any event a sympathizer,—so it was with my wife and our pets. In every trouble they would run to her. Smarting under his severe punishment, Major went to his mistress, who with some feeling declared it was a burning shame! It surely was a caustic remedy. But then it effected a cure. At any rate, we never suspected the animal again; so his character was reclaimed from that day forth.

I cannot but think that among the so-called intelligent animals—though, compared with civilized man, it must be small—there may be found a moral sense, even a conscience. True, we are as yet in the dark on this matter of animal psychology; but it must be admitted that dogs do often know when they are doing wrong. These animals will steal off at night for a sheep-killing raid, and, their slaughtering fun over, how careful the rascals are on two points,—first, to go to the water, the pond or the brook, and wash away every trace of the crime; and, secondly, to get home and demurely ensconce themselves in the kennel before the master is out of bed.

There is a proverb, "Set a thief to catch a thief." But the detection of wrong-doers can surely be effected on a higher plane than that. It was years after Maje had mended his ways that he showed himself to be an admirable detective. A friend had presented his mistress a pair of high-bred fowls. One night they were stolen, much to the regret and bewilderment of us all. Who could have taken them? Maje solved the problem.

As to fancy fowls, it is sufficient for identification if the head and feet can be seen. The day after the birds were missed the dog brought two heads to the house: they belonged to the stolen poultry. The beast knew well what he was about, and made manifest that he wanted one of us to go with him. This was done, keeping, however, well behind him. The animal went to the back of a tenement-house where the offal was thrown; there he took up four legs in his mouth and brought them home. All was plain as day. The family in the tenement were notorious chicken-thieves!

Our Major, as has been said, was choice of his company. As to cats, the old traditional enmity was rancorous in his breast. He was unhappy if any were present; but he was forbidden to practice his policy of extermination.

One evening Deacon Regnard, a mild and worthy man, brought his whole family on a visit. I went with him to the gate in the lane, to see that the horse and wagon were cared for; which done we were returning to the house, when, as I supposed, a black cat was seen in the shadow cast by the building in the moonlight. As Maje was with us, I expected there would be a scene. And there was! but not what was looked for. As to the domestic cat, of whatever stripe, Major was no respecter of persons, attacking all alike. But there must be discrimination somewhere; so an exception was made in favor of polecats. I noticed that Major had retired from the field. He had gone round the corner, discretion being the better part of valor. The good deacon was blind of one eye, hence his discretion was one-sided.

There is a proverb about evil communications, and the deacon within a few minutes after his arrival had broken up the evening party at the minister's house.

Wisdom gains with experience. After this, when we were living in the Catskills, Major managed a similar matter with much better judgment. My next-door neighbor was a stately old gentleman who had served in the war of 1812, and was known as the Colonel. He owned a large yellow dog, which also was called Colonel by the villagers. "The twa dogs" Colonel and Major became fast friends; and whenever any unusual task was on hand, a combination was made to put the business through. One night there was trouble in the hennery of Major's mistress. Mephitis was in the hencoop! Now, though pitch cannot be handled without defilement, that intruder must be ousted, and possibly punished. The two united for the undertaking. As the superior officer the Colonel was allowed not only to lead in the enterprise, but also to do all the fighting. There was a warm time; and the battle might be scented from afar. When the job was finished the Major was scathless, the Colonel only bearing evidence of the fray.

It is certain that dogs can sometimes interpret the drift of things, and so foretell events. When we were packing up, ready to leave our home in the Catskills, Maje was very uneasy. The day came for leaving, and the stage was at the door to take us nearly thirty miles to the steamboat. Where was Maje? I had his collar, and a cord, and wanted to put him in the stage. I got worried, as time was now a consideration. So we must go without him! Now that is just what he was afraid

of! and when I went to put one of the children in the coach, there was the dog! He had got in by stealth, and had endeavored to conceal himself under a seat.

As to the solemnities of birth and death, that animal upon occasion perplexed me profoundly. He knew of the birth of a little mistress before I did. The three of us, myself, my little boy, and the dog, were playing together, when on a sudden he disappeared. He was not gone more than three minutes, during which time the big beast had entered the natal chamber, pushed the terrified nurse aside, forced his black nose under the bedclothes, kissed the baby, licked the hand of its mother; then in the most orderly way, and of his own accord, he left the room, and came back to tell me as well as he was able about the new arrival.

My wife's mother was taken ill, and it soon became evident that there was little hope of recovery. None knew it better than the noble creature; and day by day he insisted on lying by her bedside, so that when the end did come the poor animal had to be forced from the room, to vent his grief elsewhere.

One of my children was taken sick. By this time Maje had become old and infirm, so much so that to go up steps was a painful effort. To reach the bedroom where his little mistress lay he would have to ascend two flights of stairs. The dear old fellow was found by a lady friend in the middle of the second stairs, suffering from his efforts. She kindly carried the heavy beast down to the kitchen; then returned, and told the child's mother, who, after listening with painful interest, said: "Ah, I wish you had helped poor Maje up! I

remember his attention to mother when on her dying bed. And now my hope is gone. I see plainly that we must lose our dear child! The old dog has foreseen what is coming!" And the mother's foreboding proved true.

It was even so! Soon the sweet child was laid where the purple asters were blooming. And it was not long afterwards that old Major himself crossed the bourne appointed for all living, whether dogs or men. In the children especially the old dog had sincere mourners. They had watched him attentively for a few days, during which the animal was sinking simply with age; and when the end came there was genuine grief.

His young master, now a lad turned sixteen, dug the grave. I was away from home. The mother told me they all cried, — the boy's tears falling on his spade. He and his sister, with a brother both much younger, gathered a profusion of ox-eye daisies, for a soft enswathement for their old playmate. Thus lovingly in a shroud of simple wild-flowers the companion of a lifetime was gently laid to rest!

For a long time the children would often recall some act or trait of their old playfellow. The little girl had to tell every comer of his death, even the aged fishmonger at the kitchen door.

"When did old Maje die, sissy?" asked the fisherman.

"Just at the edge of evening."

"What! why that was just ebb-tide! So the good old dog went out with the waters, as folks do! Ah, missy, every way old Maje was an uncommon dog."

The Dog of Ulysses.

Those were truly golden hours when upon fitting occasions I used to narrate to my children little episodes from nature. The death of old Major afforded another opportunity. Then came the pleasure of anticipation when it was known that I was going to tell a dog-story nearly three thousand years old. So in few words a sketch of Homer's Ulysses was given, — his return from the siege of Troy, after innumerable perils by land and sea, — how he came back in the garb of a beggar after an absence of nearly twenty years, — his entertainment as a stranger by his swineherd Emmæus, — his recognition by the old dog Argus, after a bare escape from destruction by the younger dogs. I then read them the following free paraphrase of the poet's story:

HOW OLD ARGUS DIED.

Through full a score of years of trials great
Ulysses had not seen his palace gate!
In woes on shore and wreckage sad at sea,
He seemed the dooméd son of Destiny.
At last his countless wanderings are o'er;
In beggar's garb he 's reached his swineherd's door:
Emmæus was this aged servant's name,
Who knew not of his liege-lord's Trojan fame.
He mourned his master, lost to wife and home,
As dead, or doomed in cruel realms to roam.
Thus was he musing 'bout his lord — when, hark!
He hears his hounds in loud ill-meaning bark.
Inhospitality — thus did the swineherd hold —
Is base as towards the wanderer from the fold.

A slave unknowing might take pious charge
Of some one whom the gods had sent at large.
Thus furious at the insensate brutes he went,
And right and left his righteous rage he spent.
With staff belaboring he soon set free
From their assault the beggar thought to be.
His guest well housed and fed, he opes his mind
About his lord in words both wise and kind.

"My dogs do beggars hate, nor heed my fears
Such may befall my master unawares!
They hurt my plea that Fate's all-staying hands
May help my lord if in unfriendly lands."

Thus all unwittingly with pious fear
The swineherd held Ulysses' listening ear.
"Ah, were my master only home to-day
Naught from these miscreants his right arm could stay,
Who wife and son despite do revel hold
Like wolves when shepherd is away from fold.
They boast Ulysses dead, so long from home —
Ah! were he back 't would be their day of doom."

A night's sleep with his herdsman him refreshed, —
Though as a squalid beggar still he 's dressed,
This state of things he 'd see with his own eyes
The better in his mendicant disguise.
So 't was next day, and at his own request,
To the great house the swineherd led his guest.
They had near passed the stable ordure by,
When from Ulysses' keen, observant eye
A tear unbidden fell! There Argus lay, —
The vermin slowly eating life away.
A brave young dog was he, his master's joy,
When long ago the chieftain left for Troy.
The pseudo-mendicant suppressed his thought,
Hence still his name the serf suspected not.

The beggar's pitying made Emmæus bold
To tell of memories of times of old.

"This is old Argus, once a famous brute;
Of dogs our isle had none of his repute!
He was my master's favorite mastiff when
He left his home for lands of hostile men.
Oh, but a grand, courageous dog was he,
'Fore whom the fiercest ravening beast would flee!
Ah, had he now the strength he vaunted then,
My master's house he'd empty of these men."

Then to the serf, so true beyond his kind,
Ulysses fain would vent his aching mind.
"How ill when servants pass beyond control—
This base neglect should roil one's inmost soul."

The old dog stirs, then drops his lifted ears—
For 't is his master's very voice he hears!
'T was aged Argus! poor old dog,—too weak
To rise or bark, or any way to speak!
Though the poor beast entirely helpless lay,
He wagged his tail in a responsive way!
Too feeble he to move,—and even blind,
He knew his master, and just weakly whined;
A weary score of years away, 't were vain
To hope to see his living lord again.
A gladsome thrill, ere the ordained release,
One pang of joy, and Argus died in peace!

Nero of the Catskills.

Having showed what may be called dog divination in Major, I must narrate an occurrence when I was living in the Catskills. A farmer owned a valuable dog named

Nero. For several nights there had been sad havoc among the sheep, and suspicion had fallen upon Nero, although the farmer and his family felt certain of the animal's innocence. Every precaution was now taken to keep Nero at home of nights. Still the havoc went on, and suspicion waxed into assurance; for a watch had been set, and it was now asserted that the dog was seen at night in the region of the slaughter. Because of the pains taken to keep him at home, although feeling assured of the animal's innocence, the farmer assented to an examination of the dog's mouth. To the grief of the family, the whole thing was now plain — for between the dog's teeth a little fresh wool was found!

At the breakfast the farmer told the family that it was his duty to kill Nero. His ingenuity in eluding their efforts, and the clear proof of his guilt, made it certain that the animal was hopelessly incorrigible. During this time Nero was in his accustomed place under the table.

But when the breakfast was over the dog was not to be found. He had withdrawn unseen, — just gone aside, may be, to consider his evil ways. The farmer procured a rope with which to tie the animal to a tree, and had his gun heavily loaded. All now was ready for the execution — but the culprit had fled! Assuredly that animal had learned all about it, and had averted his doom by flight.

Three years rolled by, and the affair was well-nigh forgotten. The farmer had returned home late one night from Catskill village, where he had delivered a load of

produce on the steamboat. At the breakfast next morning he interested his family in the following way:

"I saw somebody at Catskill yesterday, and you would n't guess who it was. Well, after shipping my stuff I took the horses to the tavern stable to bait, and then took a stroll in the town. Feeling something at my legs behind, I turned, and there was Nero! How glad I was to see the old dog! — and he was glad too. But I thought there was just the least bit of offishness. I have no doubt that he looked on me as his kind old master; but the recollection was there of what he had escaped. The good dog! It was of no use! I tried to coax him to come with me. Having paid me the attention he thought was due — he got out of my reach pretty quickly. I believe the dog knew it would n't do to come back where his character was bad — and perhaps, too, he felt his whole duty now was to his new master; but who he was he gave me no chance to find out."

CHAPTER V.

ANIMAL HUMOR. — CANINE CRANKS.



HAVE seen among dogs a noble forbearance under provocation, — a sort of magnanimity, offsetting the meanness of some ill-tempered cur. But in every instance the noble beast has been of large size and good strain. This occurs the oftenest when a fine animal is receiving the impertinences of an ill-bred mongrel, or a pampered whiffet whose back it could break as it might that of a rat. The following I received from a friend who came from the place of its occurrence.

The Mastiff and the Cur.

In a Western city, a few years ago, a fine mastiff could be seen in the morning going to market, and carrying a basket with his mouth. A little cur lay in wait on a door-stoop, of set purpose to annoy the large dog, seeing that owing to the basket in his mouth the mastiff was at a disadvantage. Now to me it seems that the little mongrel had two motives under consideration, — the fidelity of the large dog would not allow him to set down his charge in

the street in order to settle with any side issue, and the big thing that it was for one of his size to be able to harass so great a fellow with positive impunity! This latter to the little whiffet was really glorious.

So each morning as the mastiff passed the house this bit of canine impertinence would dash down the steps where he had lain in waiting, and go for the great brute's tail; and after following a few houses down the street, would return barking, as if to say, "See what I have done! I'll teach him to keep off our sidewalk!"

The above performance was enacted twice a day,— that is as the mastiff went to market with his empty basket, and as he returned with it containing what he had been for.

It turned out that the neighbor next to the whiffet's home procured a force-pump with which to wash the windows of his house, which pump, when so used, was set in a tub filled with water. The annoyance of the cur, and the admirable forbearance of the large dog, was the general talk, and was looked for by the immediate neighbors twice a day. But sometimes there comes an unexpected tide in affairs.

One morning, as the mastiff was going to market, the man with the force-pump was preparing to wash his windows. He had just filled the tub with water, when on came the large dog with his empty basket, and down the steps dashed the little torment, barking at its utmost, and prudently snapping behind at the tail. The mastiff now saw his opportunity to settle up all scores in a right becoming way. He stopped, set

down his basket, seized the little imp of incivility by the dorsal ridge, and doused it in the water, holding the little pest down a few moments, and repeating the operation until he thought the cure complete.

The change on the part of the little brute from its practiced bark of insolence to its yelp of abject terror would have excited pity where the facts were not all known; but the verdict was, "Served him right."

The mastiff at last lifted his little persecutor out of the bath, and set him on the walk, without hurting the tiny torment a bit,—except, perhaps, the wounding of his feelings. It was a highly successful case of hydropathic treatment.

Now it is observable, that the large dog made no fuss whatever, nor lost any time unnecessarily, nor did it hurt the little cur beyond cooling off his impudence, and replacing that commodity with the rarer one of humility. All which being done very much quicker than it can be told, the mastiff picked up his basket and went about his own business. Surely the chastisement, in the moderation and dignity of its application, was admirable.

But then, Mastiff Tige could not afford to be less than magnanimous. Crush his little teaze! What could be easier? Oh, no,—a mild punishment will suffice. Vengeance on a weakling would sully Tige's pedigree. Was not she of his stock who watched by her master slain in the battle of Agincourt? Besides, is it not down in the Chronicles? And more, as Marshall gives it, was not he a mastiff who in open combat did conquer a lion in the presence of James I.? And did not

the king make royal declaration that thenceforth "he that had fought with the king of beasts should never fight with a meaner creature." This our noble brute had borne patiently, and now he had cured impertinence by a chastisement inflicted in admirable judgment and with moderation and dignity.

Pompey of Edinburgh.

Of course in the conduct of the two dogs the cur was the crank. I have said that in my experience canine crankiness has not been observed in dogs of large size and noble strain. This should be modified to this extent, that I have not seen meanness in such. The best animals may have idiosyncrasies, or unfortunate peculiarities at some points. It was thus with Pompey, the black Retriever, the subject of Hugh Miller's narrative. He was a fine animal, with some crankish weaknesses, and whose intelligence recalls our own story of Nero of the Catskills.

Pompey was a black Retriever belonging to a lady in Edinburgh, Scotland. He had an unfortunate and persistent habit of damaging the gardens around. This made it necessary to get him out of the way; so he was sent to be kept by an old servant. In this new family, as to the children he was gentle, and even affectionate; but as to his keeper's dog, he put on airs, became domineering, and even savagely attacking the dog occasionally. Of course this was not to be borne with; and patience at last was exhausted, despite his specific name and high training. Pompey

could not retrieve his course. He was given over to evil ways; and it was now agreed upon that his bad habits were incurable. So he was condemned to death. The butcher received orders for his execution, and the day for his doom was set.

This was sad news for the children, who loved the dog despite his faults. It meant death to their new playfellow. Frequently, with their arms around the neck of the condemned malefactor, they would commiserate the culprit, and exclaim in a bemoaning way, "O poor Pompey! You're going to be hanged!"

It was soon evident that the dog had taken the matter to heart; for on the morning set for the hanging, when Pompey was wanted he had disappeared, being indisposed to figure in such an arrangement. Where he had gone was not known, for he kept out of the way — until, as he supposed, the storm had blown over, when he returned home.

Here was the weak spot in the animal's tactics, — he could not keep away. In this respect he was less knowing than Nero. So another day was set for the execution. This fact being mentioned by the "old servant" to a lady who was interested in Pompey, she interceded, and obtained a reprieve of sentence, and even adopted the dog, in surety for his future good conduct.

The animal seemed to have resolved to mend his ways, for he did turn over a new leaf, and conducted himself commendably under his new mistress. "For a full year he was much depressed in spirits, and wore quite a hang-dog look. But after a while he made

another serious slip. "There was a general change of servants in the house, and Pompey, who disliked strangers, bit one of the new-comers. His mistress, without meaning a threat, said to him, "O Pompey, you'll be hanged after all!" At this Pompey again disappeared, and could not be found.

"An advertisement in *The Scotsman* was answered by a gentleman, who stated that an ownerless dog, of the description given, had been caught *changing trains* at Layton, Cumberland. Here he was detained; and although at home averse to strangers, he displayed at once extraordinary urbanity, and was soon a great favorite. It was plainly his intention to ingratiate himself with his new friends, that he might not be given up to a disgraceful death. But a friend of his mistress identified him, and he was sent home."

In Pompey's conduct we find intelligence of a high order manifested on several lines. He understood well the meaning of certain words, about which he had never received instruction. And he knew how to travel from home, although it was said he had never been on a train. And how well he could act upon expediency! His dislike of strangers at home,—how thoroughly it was held in check when abroad, and how wise his deportment in making friends of his new acquaintances! Can we do less than admire the high quality of this animal's mind? What tact in escaping that impending judgment! How shrewd his behavior for the present! And what forecasting of the possible danger in the future! All this in a human culprit would be called sagacity.

Frenchie the Greyhound.

"Headed like a snake,
Necked like a drake;
Backed like a beam,
Sided like a bream;
Tailed like a rat,
And footed like a cat."

In proportion to the size of its body the greyhound has the smallest head of all the dogs; hence it is not noted for intellect,—its energy having all gone in the direction of speed, there is none to spare for brain-power. In former times the greyhound could cope with the wolf, but for many hundred years he gradually degenerated in strength, and towards the close of the last century was so deficient in courage and perseverance that Lord Oxford, one of the lights of the sporting-world at that time, paid great attention to the strain and training of his Greyhounds. He was so successful that, after the sixth or seventh generation, he secured in his hounds the courage and indomitable perseverance of the bull-dog. Thus the hound having once started after his game did not relinquish the chase until he fell exhausted, or perhaps died. This little preamble will serve to introduce Frenchie to the reader.

This young dog was one of the most exquisitely graceful creatures I ever saw, whether for form or complexion. He was a pure fawn-color, and young. The dog was reputed to have come from the French steamer *L'Amerique* which went ashore at Long Branch.

This elegant brute played the rôle of a tramp or strolling nuisance to perfection. He would go to a house, and in the sheerest cheek impose himself upon its hospitality. His pure fawn color, and faultless figure, — in a word, his appearance of a real "gentleman-like dog," — won for him everywhere a reception and a home. But the fine fellow, for all his grace, was a graceless scamp. He put himself as a stranger upon us, and was entertained several weeks, during which time he committed slaughterous havoc in a sty of hogs, going off several miles for the sake of doing the despicable deed. For this fun I had to pay the piper, being mulcted in damages as the quasi owner of the beast, in that I had harbored the vagrant.

Among the dogs Frenchie seemed to be looked up to as a pattern of canine courtliness. Chivalric he was not. He had a priggish temper, a sort of snappish bravery, and this testiness made him untrusty and dangerous. You could not punish him. The animal would spring at you, never aiming low, but always for the throat. My oldest son on one occasion offended him, and he sprang for his throat, but was caught by the neck, and held until his temper had time to settle.

As to form Frenchie was a genteel exquisite. I called him Don Quixote, — pronounced Dōn-ke-ho-tā. This was heard by the expressman, who said he didn't think him much like a donkey, but he did think that as a dog-dude he couldn't be beat!"

On another occasion I had to interfere to arrest his

unprovoked and unknightly design upon the charcoal-vender from "The Pines." This led me to say, by way of apology, that for a canine so highly bred his conduct was not commendable. To this our "Piner," who is an original, replied:

"I don't know what a canine is, unless it's a breed of dogs; and one with another I've kept a good many kinds in my time, — setters, pointers, retrievers, rabbit, and coon dogs, — but for show-pints that critter beats all nature. He's just the handsomest git-up of good-for-nothingness in dog-flesh that ever I did see; but beyond that he's got no more manners than a ground-hog."

In view of the animal's high breeding and beauty, the utter absence of the lovable qualities belonging to a dog was a puzzle. In our long experience with pets, we never had one, this excepted, that did not take to its mistress with marked affection; and her kindness to animals was sufficient explanation.

One day Frenchie came home in a shocking condition. He had a clean-cut wound in his side several inches long. The poor thing was laid up. For many days my wife nursed the brute with watchful care. Her attentions were received with no manifestations of emotion, although the poor beast was utterly helpless. At last the wound closed, and the dog left his bed. He took his food in the usual ingrate way.

On animals feeding Krider has some good thoughts: "As to the cat, — how she growls like a tiger over its prey! Mark how she gorges, only purring and looking

with fierce eyes for more when the last morsel is finished. After that she washes her whiskers with a world-wise air, and the entire line of Adam is nothing to her until she grows hungry again.

"Observe your dog, when he feeds,—how his tail goes, and his eyes pour out thankfulness! At every mouthful he looks up to show his gratitude. We will venture to say that few Christians feel a livelier sense of devotion at their meals. If he indulges in any mirth at his dinner, it is all of a grateful order. The hand which feeds him is his divinity, and of course he looks no higher in returning his thanks."

The second day after leaving his bed the dog went to his mistress to be fed. She gave him prudently, not a filling meal, saying, "You shall have more by and by, Frank." He ate the meal in the same unemotional way. Then the ingrate disappeared! Yes, left for parts unknown. It was some months afterwards that we heard the strange tramp had established himself on a farmer some twenty miles away, though it is possible he may have had at least one other master in the mean time.

In this way Frenchie tramped, everywhere making friends at sight, and after getting housed, admired, and petted, turning out a scamp and a nuisance, and at his own volition moving on to impose himself upon the good-nature of some one else. For a caution to kindly disposed people he deserved to be branded with the words *Cave canem!* (Latin for *Beware of the dog!*")

Canine Recluses.

I have recollections of several eccentric dogs whose acquaintance was not to be cultivated. One was a water-spaniel, an elegant creature, but a worthless character. He deserted his master, and for a few days imposed himself upon us. He then took a fancy to the jail-yard, devoting his attention to the public crib, on which he got fat.

Another was a yellow mongrel which secreted himself under the outhouse, only exposing his head for food. He was a vicious scamp, — unprincipled, — from sheer wantonness killing chickens on the sly, for all madam's kindness to him; and so got killed himself.

The third was a strange being, whose history no one could get at. The theory was that he had been left by the circus. This dog was a hermit Diogenes. Timid and morose, he kept himself aloof from dogs and men. He took possession of the middle of a field, and in all weathers, in rain or snow, the whole year round, every night he barked incessantly. Occasionally a raid upon "the circus dog" would be made by the village boys in troop, and he would flee for life. But when the night came he was at his post again, barking until the morning light.

A Trio of Tramps.

In Krider's *Sketches*, a sporting book published more than thirty years ago, mention is made of a trio of homeless dogs which tramped the streets of Philadel-

phia in company. They were "sometimes seen lying side by side on a door-step, or in the shade of a garden-wall; at other times foraging in the alleys and empty market-houses; but from their deformed appearance, constant companionship, and absolute disconnection with man, always impressing the mind of the beholder with a feeling of desolation strangely foreign to the scene.

One, a female with a broken limb, curiously distorted, was a gaunt, hollow-eyed brute, upon whose infirmities the others seemed to wait with tender consideration, as it was observed that she was always the first to move on after a halt.

Another, an old mongrel mastiff, had lost his upper lip, which gave him a very unsightly look.

The third was perfect in form, a meek, mild-eyed cur, who appeared to have joined the two misanthropes because he had been fairly forsaken by the world.

"There was something strongly expressive of apathetical indifference to the beings around them, in the aspect of the first two mentioned. Strictly shunning the society of their race, they seemed an isolated community in the midst of strangers. The human voice, no matter how kindly tempered, produced no visible effect, except to make them move listlessly on. The last would acknowledge sympathy with man by wagging his tail when spoken to; but no artifice could induce him to loiter behind, when his companions had once resumed their way.

"Some mysterious feeling appeared to bind them inseparably together. They never disagreed, and were

always in good condition. We have been assured by a gentleman of the highest respectability, that his family has repeatedly seen the last, when food was offered him, go quietly, and place it at the feet of his friends.

"And thus, for several successive seasons, the strange trio was seen in various parts of the crowded city,— always together, and always by themselves, lodging no one cared where, and eventually disappearing no one knew how."

The writer says that when last he saw these dogs, it was evident that the female had whelps, though where she kept her litter while she went with the other dogs, on their daily rounds, no one seems to have known.

Leaving these three vagrants, the following capital sketch is from the same source.

The Tyrant Terriers.

Dogs have been known to form offensive and defensive alliances with each other, which, like the rulers of the earth, are liable to abrupt and disagreeable conclusions.

A physician of Philadelphia had in his stable a terrier, which formed a league of this kind with an individual of the same stock, belonging to a sugar-refiner in the vicinity. The chief end of this alliance, it was observed, was to mount guard at a corner of the court on which the stable was located, and make battle with anything in the shape of perambulating

dog-flesh which might happen to pass that way. Now there lived, about a square above the court, a Dutch baker, who owned a large dog, which regularly attended his master as he went his morning rounds with the "staff of life" on his shoulder.

This was a quiet, sleek, well-intentioned animal, but a few months out of the days of his puppyhood. His name was Tim, and we can safely aver that he was a dog of repute, harboring no evil designs of any kind in his head; which, to tell the truth, was very far from being the case with the terriers.

Time after time had the latter assailed and beaten the baker's dog, and no redress could the sufferer obtain, except, perhaps, when some vagrant boy, in his zeal for fair play, would shy a stone at the heads of the two bullies. The people of the neighborhood were too busy to attend to the quarrels of dogs; so that, unless the fates interfered in some unforeseen way, there really appeared to be no salvation for Tim, since, in the ordinary course of things, there was every prospect that the breath of life was eventually to be worried out of him.

Months passed away, and the dog increased in size and strength; but the evil under which he had so long howled was by no means abated. So far from it, indeed, that he was now obliged to leave the baker every morning at the first street above the court, and make the circuit of the square to escape the expectant fangs of these two sons of Cerberus.

We have no doubt that this troubled Tim exceedingly, for a close observer of these sagacious animals will tell you, that if there is anything which a faithful dog

takes a praiseworthy pride in, it is in appearing to the best advantage in the eyes of his master.

It is but fair to state that the two tyrants sometimes engaged in terrible combats with strange dogs, and that, so far as we can learn, they invariably came off victorious. No doubt these desperate contests, witnessed from afar, struck additional terror into the heart of Tim.

However, it so happened that upon a certain New Year's day, as the doctor and the sugar-refiner were conversing in the street, they saw the baker coming towards them, with his sleek black dog behind him. The two tyrants, as usual, were sitting at the corners of the court, on the *qui vive*, — the bigger, whose name was Flame, mounted on a fire-plug, and the lesser, who was called Smoke, watching beside a lamp-post. The name of the court, we should not forget to state, was Concord Place, — which was somewhat at variance with the character of its guardians, although Relief Alley, a narrow passage directly opposite, was no misnomer, so far as it is connected with our narrative, inasmuch as it had often saved Tim, at need, from the teeth of his determined assailants.

"Now," said the doctor, "let us watch the motions of these three dogs."

"I have often noticed them before," said the other, "and the baker's dog will certainly leave him at the next street."

But whether it was that the evil had reached that pitch at which endurance ceases to be a virtue, even in a dog; or that the day being the first of the year, Tim was determined to begin it with a new tally, is open

to conjecture. We only, as historians, faithfully chronicle the fact, that, with head and tail erect, deviating not a hair's-breadth from his route, Tim sturdily stuck to the Dutchman's heels.

The two tyrants bristled their spines, erected their cropped ears, and waited for the opportunity to pounce upon him. The baker stopped at a customer's door, delivered his bread, and passed on. Tim followed; Flame glanced at Smoke, and, as was the rule of warfare observed by the belligerents, the latter advanced to commence the onslaught, nothing doubting of an easy victory.

But the instant that he came sufficiently near Tim, the late meek and gentle disciple of endurance savagely seized him by the back, and, lifting him clear from the ground, shook him in a manner which, however delightful to the doctor, must have been as disagreeable as unexpected to Smoke.

"Served him exactly right," said the sugar-refiner, gruffly, while the doctor cried *encore;* and a quick eye, accustomed to read the physiognomies of quadrupeds, might have noticed something of unpleasant surprise in the looks of the chief tyrant. Nevertheless, quickly descending from his post of observation, he boldly advanced to the rescue of his comrade, who was no match for Tim now that his ire was fully awakened.

The beholders were now all expectation to see what the baker's dog would do in this emergency. The result was not long in doubt; for as Flame approached Tim gave Smoke a last severe shake, which effectually settled him for the time, and meeting his chief assailant

half-way, grappled him with a fury which, as he was really the stronger dog of the two, landed him on his back in the gutter in a moment. Smoke, beholding this with increased dismay, fled in inglorious haste through Relief Alley, leaving the field to the two remaining combatants, who fought vigorously for a few minutes longer, the one loath to lose his ancient supremacy, and the other determined to provide anew for the contingencies of the future.

At length the scale of battle turned, — the doctor's dog cried for mercy; and Tim, after fairly vanquishing the two redoubtable tyrants, trotted on, like a knight-errant of old, to rejoin the baker's banner.

"Now," said the doctor, "that dog has taught us a lesson which the crowned heads of Europe might learn with advantage."

"Yes," answered the other; "and he must have premeditated the action, for to my certain knowledge nothing could have previously induced him to pass that court when your dog or mine was in sight."

"It looks very like the reasoning power, I confess," said the doctor; "but see! here comes your young dog back."

The most curious part of the affair now occurred; for as Smoke came up to Flame, for the purpose, no doubt, of comparing injuries, the latter, who was licking his wounds, instantly flew upon him, and, without paying the least regard to their former relations, inflicted upon him a tremendous mauling. At this sight the physician, unwilling to lose his professional gravity in the street, started instanter for his office; while the sugar-refiner,

albeit not possessed of so quick a sense of the ludicrous, retreated to a counting-room in a huge smoky building across the way. The alliance was, however, dissolved, and the two discomfited tyrants were never seen together from that instant.

In this story, for the truth of which we can vouch, we see strikingly displayed, first, a mutual understanding, resulting in a regular alliance for the purpose of aggressive warfare; next, endurance, amounting almost to abject cowardice, on the part of a third dog; then a noble resolution to resist oppression to the last; and, finally, a violent dissolution of the league, consequent upon the signal defeat of the two tyrants.

And one other item in the account is the punishment which Flame inflicted upon Smoke, who as ringleader had drawn him into an alliance, or course of conduct, which had resulted in such unlooked-for disaster and ignominy.

CHAPTER VI.

ANIMAL HUMOR.—SLEDGE-DOG ANTICS.

NOT all wit is wisdom; and studied waggery is often stilted untruth. It was an ill-judged joke, though perpetrated by a professional wag, when he asked another, "Perhaps you don't like dogs?" "That would be putting it rather strongly," was the answer; "but if I should visit a country where there were none, that would n't prevent my remaining there!" If that individual should visit Greenland, and have to drag his own sledge, a short experience at tobogganing over ice-floes would put him in love with the Arctic dogs, and make him a sincere believer in the merits of these valuable animals as servants of man; and unless the dogs were there, his remaining in that country would not be voluntary.

The dog is to the Greenlander what the horse is to us. And even to the Polar explorer that surly little draught animal, the Esquimau dog, *Canis borealis*, is the one animal that makes life and labor possible in those trying regions. And how little is told us of the merits of this much-enduring, much-suffering, and hard-worked creature! Though it be but a piecemeal sketch, yet I will try to tell something about—

Lieut. Lockwood's Arctic Dogs.

Had he been spared, there was one young man in the Greely expedition who could have told their praises. It was he who trod the farthest northern land pressed by foot of man, Lieutenant James Booth Lockwood, whose career was worthy of the poet's lines:

> "He lived as mothers wish their sons to live;
> He died as fathers wish their sons to die."

His kindly humor and clear insight were as feeling and vision, and such that he could have given us the truest picture of this invaluable little beast, the Esquimau dog, that has ever been portrayed.

In the diary left by this young hero-martyr are occasional sketches of these dogs, — pitifully brief, but never hazy, always clean-cut and sparkling gems.

Let us premise that in July, 1881, the expedition reached Disco, in southern Greenland, and there with other necessaries the steamer took on board fourteen Esquimau dogs, more being taken at other places afterwards.

"The penning of the dogs at Disco was a scene of excitement and amusement. Their snarling and biting and fighting had no end until one of the number present was acknowledged by all the others for his prowess and valor the victor. Then the contest ceased, but only until there was a new arrival, when the battle was renewed, and the *parvenu* put *hors de combat* or declared king. In due time the steamer left Disco, and arrived at Ritenbank," where it took on other supplies. From Ritenbank they proceeded to the more immediate scene of their labors.

The time had now come for Lieutenant Lockwood to start upon one of those tasks whose achievements have won him imperishable fame. Commander Greely had intrusted the Lieutenant with two men, and a sledge with a dog-team of eight animals. It was an adventure of peril, and their way was over the terrible Arctic floes. The young leader said: "If I know myself, I will not return unsuccessful." It was April 2d, 1882.

"We got off at 8 P. M., with Jewell, Frederick, and the dog-sledge Antoinette." He thus sketches his dogs: "The team of eight consisted of 'Ritenbank, the king,' a large white dog, at whose growl all the rest trembled; 'Major,' a friend of Ritenbank, and a very useful, good-natured old fellow, hard-working, and quiet, without any special characteristics; 'Howler,' a large lean, mean, ill-natured brute, whom they took on at Disco, and who lorded it over the rest till Ritenbank came on board, at the place of the same name, when Howler was dethroned; since which he had been morose and misanthropic, and never associated with the other dogs. He set up the most unearthly howling whenever any other dog approached him, and especially if that other dog had designs on something he was engaged in eating, or trying to eat, — a tin can, for instance.

"At the end of a march, when the pemmican or dog-feed was cut up, and he, with the rest, was awaiting his opportunity to make a general rush, his howling became almost unendurable. But he was especially despicable, because he allowed any and every dog of the team to jump on and bite him. His only redeeming trait was his earnestness in pulling; for, when the sledge

stuck in deep snow or rubble-ice, he was the last of the dogs to sit on his haunches and look while *you* got it out.

"On several occasions when Ritenbank was making efforts to get inside the tent and steal the meat, while all were asleep, Howler had given the alarm by his unearthly howling. His place in the team was on the right flank, and he kept it all the time, never dropping back and coming up in the wrong place, as did the other dogs.

"Next to Howler was the 'Woolly dog,' a dirty-looking cur, with long white hair, which made Howler's life a burden all the time by snapping at him as he hauled by his side," his thick coat making the biting harmless.

"Next came the 'Kooneys,' signifying, in Esquimau, mother-dogs. They were called 'Black Kooney' and 'White Kooney,' and were both good workers. Then came 'Ask-him,' a pup when brought on board at Greenland, but now of *age*, and bearing the airs of a veteran. He brooked insult from no dog but Ritenbank, and evidently bided his time to contest the throne with him. He had even taken upon himself the kingly custom of biting the adjoining dog whenever he felt the whip.

"On the left of Ask-him were two dogs already named, 'Major' and the 'Boss.' On the left flank was 'Gypsy,' a little fat Kooney dog which pulled only under the lash, and yet by foraging and stealing managed to get twice the rations of any of the rest, and was always plump and fat."

We find on a later occasion the Lieutenant intrusted with three sleds and dog-teams. He does not tell us much about the dogs, though he now has twenty; perhaps he was too much occupied with the perils of the long journey over the ice. He writes:

"Frederick (the Esquimau) laid down his whip for an instant, and the promising dog 'Barker' gobbled up all except about six inches of the butt-end, in much less time than it takes to mention the fact. The praises of Barker had been sung ever since his birth, and this was only one of many of the tricks by which he proved his proficiency. Frederick quickly made a new lash, however, and *gave it* to Barker on the next march."

They saw two seals lying on the ice, which Frederick tried hard to shoot, but in vain. Lockwood was especially anxious to get a seal, for it looked as if they would have to kill one dog to save the rest. After much trouble, for want of food, they resumed their journey.

These dogs of sheer necessity are cannibals. The Lieutenant says at one time, "I saw the mother of a dead pup keeping Ritenbank from swallowing it, while she hesitated whether or not she would do the same thing herself."

"On the same day of the failure to get one of the two seals, in order to save the dogs from starvation, it was reluctantly decided to kill one of them with which to feed the rest, the Esquimau Frederick, however, opposing. The question now was, which should be the victim? Brainard suggested the White Kooney, but Frederick named Button, a young dog. As Button had that morning eaten up his own harness, that act decided

his fate. He was shot by Frederick, and soon the carcass was skinned and presented to his brethren. Old Howler at once seized a hind-quarter, but the others did nothing more than smell the meat. They walked around it in a reflective mood, debating whether to yield to their hunger or to their repugnance to eating their brother. In the night they had overcome their scruples; for when the party awoke next morning nothing remained of poor Button but some of the larger bones."

After making the highest north ever reached Lieutenant Lockwood writes:

"Several of the dogs becoming mangy have been shot. Poor old 'Howler,' who had given up, and whom we left on the ice-floe, hoping he would recover and follow us, was found dead near the same place. Oh! the hours of misery I have spent in sleeping-bags, kept awake by that howling brute,—howling, perhaps, just because another dog looked at him! But, for all his howlings and stealings, the ex-king was a good worker, and did his duty; and that is all that should be required of any one, man or dog. May he rest in peace in the happy hunting-grounds of the canine race! Frederick, our Esquimau, I presume will put on crape for him."

After going the farthest north of any discoverers all were joyful at the prospect of their return to the main party. The men were "in joyous spirits; and the hilarity was kept up by the dogs Ritenbank and Ask-him having a terrible fight, resulting in victory to the latter. The probable consequence was that Ask-him would now be king. Ritenbank went about with his head down and tail depressed, a dethroned and friend-

less monarch. The usurper's reign, however, was likely to be a short one, as, on the party's leaving, the dogs would either be shot or left to starve to death."

Like picking the plums from the pudding, I have taken these spicy morsels from *Lockwood's Farthest North.* They are so scattered as to be almost unnoticeable, yet I confess to being charmed by them.

We hear a good deal about noble minds being tested in trying circumstances. But what about this animal, the sledge-dog, in those inhospitable climes? With much that is uncanny, how much is there really admirable in this *Canis borealis!* What useful creatures! What capacity for work! Eight dogs dragging a sledge weighted with eleven hundred pounds!

Says the Lieutenant at one time: It was "unprecedentedly cold, even for that latitude. The poor dogs suffered; yet many of them preferred to remain curled up on the snow-banks outside to occupying the tents and holes prepared for them."

Songs of the Innuits.

And this breed of dogs, with their remarkable habits, is the outcome of a wonderful people. In their igloos, or snow-houses, in the long dreary winter, the family may be entertaining themselves with song embodying poetical sentiment of a somewhat high order, and their faithful dogs may be outside reposing in the snow. Says Dr. Franz Boaz, who has a right to speak of Esquimau poetry: "The mind of the 'savage' is sensible to the beauties of poetry and music, and it is only the

superficial observer to whom he appears stupid and unfeeling."

But it seems to me that there is profound philosophy underlying our mosaic story of the Arctic dogs. These Esquimaux, the masters of these animals, who are they? Are they the original occupants of this continent? Some have thought so, and the name by which they call themselves is significant — Innuit — MEN — *par eminence.* They have large heads, strong limbs, and "small, soft hands and feet." How long have they lived in these high latitudes? Their utilization of the dog goes far back of tradition, and we may suppose that it is the outcome of many hundred years of training.

But all this looks towards a people with imagination and humor. These Innuit, or "Men," have considerable skill in construction, and even taste for decoration. Happily Dr. Franz Boaz, in *Science,* recently has given us some of the poetry of this singular people, in which the imagination is exquisite and the humorous conceit is fine. I dare not do less than give his own words. He says:

"No people is more fond of music than the Esquimaux, the inhabitants of the extreme north. Though most explorers affirm that their music is nothing but a monotonous humming, the tunes and texts (poems) collected by me in Baffin Land will show that this is not true."

But our traveler assures us of the complicated rhythm, and the necessity of keeping time in the chorus of the songs of the Indians of British Columbia,

and then almost springs upon us a pleasant surprise by stating that each Indian village has a singing-master. He is literally the musical pedagogue, and every fall, in time for the festivals, "he gathers the men about him every day, and walks up and down the street of the village, teaching them to sing the tunes which are to be used at the winter dances and other feasts." As to the Esquimaux, the doctor adduces an exquisite little song describing in anticipation the charms of summer, which they sing in their lowly homes in the long hard winter.

"It was in the midst of winter that I heard this song for the first time. After a long and lonesome journey over the ragged highlands which form the west coast of Davis Strait, almost exhausted by want of food, and the exertion of driving and hauling the heavy sledge over rocks and steep snow-banks, we had arrived on the coast of Davis Strait, and struck a track that led to the Esquimau village. No white man had ever visited this part of the coast, and, the men being out hunting, the women and children, who had frequently heard of the *Kadlunait* ('the whites'), rushed out of the huts when they saw the sledge coming with an unknown dog-team and an unknown driver. When they discovered him to be a white man, their excitement reached the highest pitch, and they burst out in a wild dance and chorus, singing the joyful Song of Summer. This song was the most popular one at the time. It was composed by an Esquimau living farther north, 'Snowwind' (*Kenningnang*) by name, and had spread rapidly over all the settlements.

THE BEAUTIES OF SUMMER.

"Aya!
Ayaya, it is beautiful, beautiful it is out-doors when the summer comes at last.
Ayaya, ayaya, aya!

"Ayaya, it is beautiful, beautiful it is out-doors when the reindeer begin to come,
Ayaya, ayaya, aya!

"Ayaya, when the roaring river rushes from the hills in summer.
Ayaya, ayaya, aya!

"Ayaya, there is no reason for me to be mournful when the gull ceases crying.
Ayaya, ayaya, aya!

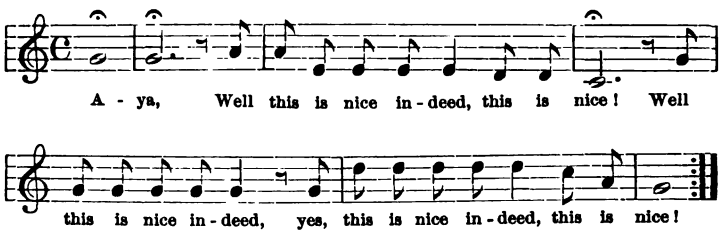
"Ayaya, plenty of meat I shall have and plenty of good fish.
Ayaya, ayaya, aya!

"Ayaya, it is beautiful, beautiful it is out-doors when the summer comes at last.
Ayaya, ayaya, aya!"

So this Snowwind was the native bard, the popular sentimental poet. Dr. Boaz says: "He belonged to a family of poets. His nephew, Utityak, had composed a well-known satirical song. One fall, when hunting on the ice, a strong gale set in, and the ice broke up, separating the unfortunate youth from the land and from his companions. Several days he drifted on the floe at the mercy of the winds. Heavy snowfalls covered the drifting ice. The swell broke up the floe, and death stared at him continually. Yet he did not

despair, nor even lose his temper, but, in mockery of his own misfortune, he composed the following song,— a flash of lightsome merriment out of what to another unfortunate would be appalling gloom. Now for the ditty:

AFLOAT UPON THE ICE.



"Aya!
It's glorious on the ice!
Here it's nice
Behold my lonesome path,
All snow and slush and ice!
This is nice

"Aya!
It's glorious on the ice!
Here it's nice!
Behold my native land!
Its snow and slush and ice!
This is nice!

"Aya!
Awaking from my slumbers in the dawn,
Monotonous fields of ice,
And gloomy lanes of water
I behold.

"Aya!
O when I reach the land
It will be nice,
When will this roaming end?
When will I be at home?
Then it's nice!"

I think the reader should try to digest the dry humor in this quaint little song. What a rush, and what merriment in its day, Saxe's ballad had, with its refrain:

"Bless me! this is pleasant,
Riding on the rail!"

And think of Utityak alone and adrift for days on the treacherous ice, driven by the biting, pitiless winds, amid heavy snowfalls, and swelling, creaking ice-floes, and face to face with Death; yet keeping his brave soul up, in cool, satiric, but hopeful song! Let us try to paraphrase this simple song, and sing it for the sake of feeling its tender pathos and homely fun:

Well, isn't here a go?
Alone upon the floe!
Oh, bless me this is nice,
Afloat upon the ice!
Ah! when I cease to roam,
And find myself at home,
That will indeed be nice!

"Besides these modern songs, the Esquimaux have many ancient ones, some of which are incantations, while others form part of the old traditions, or legendary history."

So these Esquimaux can sing the beauties of nature;

and they have songs for their grief and ballads for their fun; and so it turns that Ritenbank the dog-king, and Howler deposed from the domination of his canine constituency, and all the rest, came honestly by their cunnings and their ogreish humor; for was it not all in their masters?

The Arab will talk to his camel as one communing with a fast friend, jocosely or seriously as the humor takes him. And man in the lower stages of civilization will catch, and unconsciously mimic, the tricks of his domestic animals. When Mr. Very, an engineer, with his assistant, was engaged in surveying Hudson's Bay, there seemed a mutual wonder between them and their Indian voyageurs. The white men's spectacles were an enigma to the Indians, who had never seen "men wearing windows before their eyes"; neither had the whites ever seen Indians playing dog in order to make hard work easy. It was profitable humor. The Indians in the canoe whistled to those on shore carrying packs, like hunters calling the hounds; to which the shore men replied, yelping in perfect imitation of lost dogs, and occasionally whining as if in hopeless distress. At length, the rapids past, the canoe took the porters aboard; when whelp and whine were exchanged for the loud, glad bark of dogs that have found their master.

But what about cannibalism, if it may be so termed; since the eating of one's own kind is so repugnant even to a dog? Probably no dog known is more utilized for labor, and less coddled with care, than the Esquimau dog. But such is its suffering upon occasion from want of food, that its wits in this direction are very acute, —

and it has no scruples either as to what it is or how it is obtained. Of painful necessity, the poor brute is a sharper, a chevalier of industry, keen and devoid of principle.

It should be noted that these Innuit are intensely carnivorous men. It is for them a stern necessity. They must kill or starve; agriculture with them is unknown and impossible; and they look with a squint of pity and contempt upon the white man's bread and vegetables; and should they eat with him, such food would be considered unpalatable.

It may even be that dogs are affected by example. The Esquimaux are believed by some to be of the same race as the Red men. Dr. Franz Boaz speaks of some of these northern tribes who practice cannibalism in connection with their winter dances, with whom it is a part of their religion; and they even have a tradition that an ancestor descended from heaven and taught them these cannibal ceremonies. Another of these northern people compromise the matter. They take a human skeleton, and sew on it a wrapping of dried halibut, upon which they feast; and so make believe to devour one of their own kind. In this way they contrive to compound the matter so as to quiet all qualms of the dietetic or pietistic conscience.

It was noted that only the deposed dog-king fell to on his slain brother with no compunction of the canine conscience. All the others smelled around for some time, having to coax appetite or allay conscience before banqueting on the mortal remains of their late companion. Old Howler saw his vantage, and seized on

and tucked in a shoulder of mutton, to wit, a fore-quarter of his comrade, poor Button, before the others could make up their minds to it!

And it seems that even in the "Beyond" this Arctic dog is expected to render service; for I find it written: "The Greenlanders bury with a child a dog to guide it in the other world, saying, 'A dog can find his way anywhere.'" And at some points of their religious faith the Esquimau and the Red man view the future similarly. If the poet is correct, the Indian does not give up his humble companion at death:

> "But thinks, admitted to that equal sky,
> His faithful dog shall bear him company."

Nor need one wonder at this, if but the value the animal is to man be duly considered. The dog in his domestication — for he is but a reformed or civilized wolf — is as ancient as human history. He figured even religiously in Egypt thousands of years ago; and the genus *Canis*, ruling out the untamed wolves, had in mighty Rome a quasi scientific classification, for it was divided into three distinct groups, embracing quite a number of species. These divisions were the *Pugnaces*, *Sagaces*, and *Celeres*, namely, the fighting dogs, the knowing dogs, and the hunting dogs. The first were sometimes used in the great arena fighting the lion, and other beasts of prey; the second were the wise or house-dogs, the pets; and the third were the dogs of the chase.

These breeds were from different regions, none of them having originated in Rome. The fighting dogs

were from Asia, which formerly had an eminently martial people. The sagacious and beautiful house-dogs were from Greece, the home of art and wisdom; and the swift-footed dogs were from Northern Europe, the people whose subsistence depended so much on hunting.

As the sagacious, or knowing dogs, were from a region of luxury in art, they doubtless were family pets, and it would be interesting to know what tricks they could perform, in a word, to what extent their education was carried, though it might be that beauty was the chief point.

The wealthy of those times had their valuable and noted dogs. Alexander possessed a *Pugnacis*, probably a bull-dog, which could tackle a lion. And a certain Athenian, a fast young man, owned a fine *Sagacis*, the admiration of the city. But the author for the thousandth time must be allowed to tell his own story:

The Dog of Alcibiades.

In Plutarch's *Life of Alcibiades* the following passage occurs:

"Alcibiades had a dog of uncommon size and beauty, which cost him seventy *minæ*, and yet his tail, which was his principal ornament, he caused to be cut off. Some of his acquaintance found great fault with his acting so strangely, and told him that all Athens rang with the story of his foolish treatment of the dog. At which he laughed, and said, 'This is the very thing I wanted; for I would have the Athenians talk of this, lest they should find something worse to say of me.'"

Now in all these "Parallel Lives of the Greeks and Romans," for a bit of insane foolery this act of that wealthy rake stands unparalleled. But this young spendthrift was capable of following up a wine debauch with a night raid in which he mutilated the noses of the Hermes, or consecrated busts that piety had set up in the vestibules of the Athenian aristocracy. As the young man was a disciple of Socrates, better conduct might have been looked for. However, though he sadly marred the beauty of his $700 pet, yet, without his dreaming of it, the fine animal became immortalized in art, for he was put in marble by the great Athenian sculptor Myron, and this statuary, more than two thousand years old, shows an animal resembling a Newfoundland dog.

Is it not a highly interesting fact that the species or breeds of dogs utilized by man, which probably embrace the extremes of intelligence, are themselves very ancient? I should think that the Collie or shepherd-dog is at the top in average intellect, or canine knowingness; while the draught-dog of the Esquimau is at the bottom, since he is hardly more than a subjugated wolf.

In the Scriptures the dog is set down as an unclean beast. Still, we have in that grand and severe narrative of Job a remarkable passage: "But now they that are younger than I have me in derision, whose fathers I would have disdained to have set with the dogs of my flock." This looked as though the better the old patriarch knew men the more he liked dogs. Also it seems that shepherd-dogs existed then. Now it should be borne in mind that the dog must have reached an immense remove from his wolfish ancestors before he

can be made to keep his teeth off a sheep, let alone become its protector.

The exhumed relics of the prehistoric man of the neolithic or latter stone-age reveal the fact that this barbaric being had his dog. It is certain, too, that this dog was pretty much like the draught animal of the Esquimaux, — a half-tamed wolf. These dogs may be easily mistaken for the Arctic wolf, from which they came. They have not yet even the faculty of barking, for the wolves do not bark, but the fully domesticated dog does. The wolf is emphatically a howling brute, hence the significance of that fine line by Campbell:

"The wolf's long howl on Ounalaska's shore."

And for this wolfish ability we have but to recall the accomplishments of the deposed dog-king Howler.

But these Arctic sledge-dogs are wolfish in temper, and daring. They are not housed and cared for as are dogs with us; and the poor beasts live in chronic hunger! and, wolf-like, but for the lash and the club, would combine and kill and eat a human being, as the Esquimau in fact does eat them upon occasion, — a puppy being a luxury indeed.

The better trained of these dogs will serve their owners in the hunt. A pair can so worry a polar-bear as to detain the brute till the hunter comes up with his spear. The bravest dog is often chosen as the leader in the team, he keeping in advance and obeying the word of the driver, while the dogs in harness simply obey the lash.

The semi-domestication, or, more correctly, the life of

subjugation, while it has not advanced them to the status of the civilized canine, has given these animals, in common with dogs generally, the habit of bearing the tail up-curled. The wolf, on the contrary, always carries his tail pendent, — which the dog only does under humiliating or some other trying circumstances. As has been mentioned the Esquimau dog cannot bark. He is subject to variation in color; some are of a dingy white, or a tinge of yellow, others are blackish, and all have hair from three to four inches in length, with a thick undercoat of warm wool. The ear is short, erect, and somewhat pointed; and, excepting that the tail curls upward, the dog is in form and size the counterpart of the Arctic wolf.

Were these boreal people deprived of their dogs, their own extermination would soon follow. And yet these useful creatures receive little else than neglect and abuse from those they serve so well.

CHAPTER VII.

ANIMAL HUMOR. — A MEDLEY.

SOMETHING of the canine cunnings just considered were to be expected, because of the agility and intelligence of the animals discussed. But who looks for levity, either of mind or motion, in Leviathan? Though pastoral and very pretty, that was a bold hyperbole of the Oriental poet, — "The little hills skip like lambs." It would never have done to set the mountains to dance a minuet; that would be playing mountebank with the credulity of emotion. And yet the hugest beasts of the sea and the land will upon occasion go on a frolic. In a word, they have their times for complete abandon, when it is becoming even to Behemoth to enjoy himself.

It must be grotesquely funny to see that marine monster, the whale, in sheer merriment romping in the sea. Almost outré must be the sight of one of those immense blowers, a bull-whale, having a "blow-out," or spree, or frolic, — while the mother whale actually gambols with her calf.

Of all aquatic animals the most lubberly and misshapen is the Manatee. This uncouth-looking mammal is sometimes captured in the rivers of Florida. They

abound in the great Amazon and the Orinoco, where they are used by the people as food, and known in Portuguese as *peixe boy*, fish-ox, and in Spanish as *Vaca marina*, sea-cow. This ill-shaped beast is some nine feet in length. It has simply a flat tail set horizontally, and two paddles near the head. The hinder limbs do not appear. But though so ungainly, the sea-cows are fond of each other's society, and indulge in play together, having a good time in romping and leaping into the air.

When I was a boy the upper part of the city of New York was mainly in open stony lots. On the North River, as we called the Hudson, was a rock some twelve feet high overhanging the water as I remember. We called it High Rock. It disappeared long ago. With us boys, when off for a swim, that was our favorite place. All prepared, and standing in line, one behind the other, at the word, "Keep the pot a-boiling!" all took up the cry, the first boy plunging in, then the second, and the third, and so on — splash! splash! splash! Returning on shore, the same would be repeated, until we were fairly tired out. But the fun was fine!

Now I cannot for a moment doubt that these Manitees experience a similar enjoyment when on a frolic. Rising in the air and falling into the water with a great splash, and repeating this all along the line, the exhilaration in the change of elements, the titanic music of such huge splashings, the caldron ebullitions of the water, — in a word, this "keeping the pot a-boiling," to these Manitees is the immensest kind of fun: and, depend upon it generally, the enjoyment of these Leviathans when on a lark is intense.

I once saw a bit of genuine glee on the part of three elephants, in Regent's Park Gardens, that is, the "Zoo" in London. They were on a "regular spree," but in an original way of their own. At the orders of their keepers, they were taking their daily ablutions. The three entered the bath, a deep tank, in a very orderly manner, and what there was in their conduct to the contrary occurred chiefly out of sight, — for they disappeared entirely in the water. Not a particle of those huge beasts could be seen. The truth told, they were "cutting up" below. When they rose to the surface, their trunks expelling the air so long in their lungs with a screeching sound, like so many steam-whistles, the three flexible probosces were entwined in a great black knot, unpleasantly suggestive of three dark hissing pythons in amicable union. At first blush the sight, though ludicrous, was a little hideous. But in an instant came a better conception; it was grotesquely comical, as if so many ogres, boon-companion-like, had embraced, and were kissing in a sort of seething affection or slobbering loving-kindness. The sight, for a cold-water performance, was wonderfully bacchanalian.

Though as docile as a dog when young, the elephant becomes morose with age. His unamiable spurts of temper make him dangerous, and even ungovernable for the time, and there is no way of being forearmed, as these fits of viciousness are sudden, though generally transient. It was because "good old Jumbo," the children's riding elephant in the London "Zoo," was nearing mature age, that the American showman succeeded in buying him. In the wild state a male elephant in a

herd of some sixteen or more will be recognized as the patriarch. But grief awaits him if, when full of years, he carry matters too high-handed. With no regard for age, he will receive leave to pack his trunk, and go into retirement in the jungles for the rest of his days. He will get hounded out of the herd with the brand of a "must" or "rogue" elephant.

That pleasant *racconteur*, Oliphant, gives a graphic sketch of a Nepaulese hunt with elephants. Being a hunter of some renown, but never having tried sport of this kind, it was his ambition to share in an elephant-hunt in which tame animals were to be used in capturing the wild ones. So he asked this privilege of the king. The monarch gazed at him with astonishment. It would be as much as the life of a novice was worth to risk so rash a venture. But our hunter pressed his plea. So a test must first be made of his mettle.

He was required to mount an old elephant for a trial. A simple loop was made in a rope, by which the adventurous man might hold on to the bare back of the beast. And though with all apparent gravity and sedateness, yet in concealed merriment, the king and his court assembled to witness the trial,—or rather, to see the fun. And who can doubt that the sagacious brute understood well his part of the game? Mr. Oliphant was not the first presumptuous neophyte that the knowing beast had put through his paces.

Off went the twain! The elephant did his best at speed, and jolted his rider in a ludicrous and perilous manner. But he held on to the loop with a grip for life or death. Then came the wild brushing under the

boughs of trees, as cattle do to rid themselves of the tormenting flies. However, this rehearsal was brought to a close, and pronounced satisfactory. He was allowed, after this experience, to join in an exciting hunt, of which he gives this graphic description:

"But this was nothing to the difficulty of arriving sound in wind and limb at the end of the chase on the following day, when the elephant I bestrode, or rather on which I squatted, monkey-fashion, formed one of a band of one hundred and fifty tame elephants, tearing at a clumsy run through the jungle after the wild herd, which it finally overtook, and with which it engaged in a pitched battle.

"I shall never forget the uproar and excitement of that singular conflict: the trumpeting of the elephants, the screams of the mahouts, or riders, the firing by the soldiers of blank-cartridges (to help on the noise and excitement), the crashing of the branches, as the huge monsters, with their trunks curled up, butted into one another like rams, and their riders deftly threw lassoes of rope over their unwieldy heads, formed a combination of sounds and sights calculated to leave a lasting impression.

"It is so difficult to take prisoners under these conditions that we thought we did well in capturing four out of a herd of twelve. The mahout of the elephant I was on had particularly distinguished himself in one encounter, and presented me with the splintered tusk of an elephant, that had been broken off in a charge upon us, as a trophy.

"I came home utterly exhausted by the violent exertion

which had been made necessary to escape being mashed to pieces by overhanging branches, or crushed by the mob of jostling elephants, which must have inevitably been my fate had I lost my grip of the loop of rope, which was all there was to hold on by."

A Story of Seal Fish-Thieves.

On the twenty-ninth day of February, 1876, I went to see a seal on exhibition in New Brunswick, New Jersey. It had just been captured in the Raritan River, but a little below the city. The animal had fallen victim to a habit well understood by fishermen in other parts of the world, — that of visiting a seine for the purpose of stealing fish. The difference was that this was a young seal, — it weighed but one hundred pounds, — and was not up to the tricks of the old ones, who knew the ins and the outs, and could elude the fishermen.

This baby seal was rather pretty. Its sides were mottled with quasi-leopard spots on a brown ground. The species was *Phoca vitulina*, the calf-seal, so called because of a calf-like cry which the species can make. There was nothing calvish in the conduct of the captive, however. Its captors were attentive to its wants, and really very kind to it. One of them undertook to pat it on the head, and got an ugly bite for his goodness.

And what a head this little fellow had! so like that of a highly intelligent dog: well might Cuvier call the group *Callocephalus*, the beautiful-headed beasts, so pretty are they, and so knowing, with their large black, lustrous

eyes. Now, among the quadrupedal mammals, the seals almost seem to lead off the *Educabilia*, or intelligent animals, in cranial excellence, owing to their high, thin-boned skulls, and their large and finely convoluted brains. In this respect these aquatic carnivores even excel the lion and the tiger, and in general the carnivores of the land.

Story of an Educated Seal.

It must, then, be that the seal is not without a faculty for fun. How great its capacity for instruction is we all know. I was greatly interested observing its skill in disposing of an unsizable fish. So long as its food was provided, and abundant, it had its tid-bits in the large fishes, and was sure to reject the head. Seals bear confinement pretty well, and are quite playful. A danger comes of their voracity, as they will devour almost anything given them by the children. A pint of slate-pencils, marbles, and buttons was taken from the stomach of a seal which died in Central Park! They will romp and tumble in the water, and have mimic contests like the dogs.

I once saw a seal which had dined to its satisfaction. It was "stuffed," and had one fish left, a good-sized menhaden. Feeling comfortable after a generous meal, it was in a happy frame of mind, and actually played with that solitary fish, much as a cat does with a mouse. It would seize the lifeless thing with a snap of the mouth as catching it; and by means of its singularly springy neck, with a jerk like a toss-up would send it six

or seven feet in the air, uttering a bark or yelp of delight not unlike that of a puppy, every time the prey fell splashing into the water.

Thus in bubbling glee this sea-dog kept tossing the fish into the air. Each toss was followed by certain divings, and splashings, and bodily contortions of the seal, with shakings of the dead fish as if it were alive. It was a mimicry of hunting of prey,—that play of "make-believe" in which the higher animals indulge. Every movement was indicative of keen enjoyment. The sport was kept up about ten minutes, or until the playful thing was tired.

I should have said before, that animals which suckle their young are known as *mammals;* hence seals, whales, dolphins, porpoises, and the manatees, with all their kind, are mammals; they all suckle their calves, like our Cushie in the meadow; but this nourishing their young with milk is a method of which reptiles and birds are incapable.

Porpoise Intelligence.

Suppose we take an ordinary hazel-nut, and crack the shell carefully. Taking out the nut or kernel, we find it has a smooth, unmarked exterior. Let us now break open a walnut, or hickory-nut. How very different is this kernel! The surface is deeply marked or indented. It is not correct to speak of these marks as grooves, or wrinkles, or even corrugations. They look like flutings, pleats, and folds. Suppose I call them convolutions. Now if I could remove the thin membrane which covers

the kernel of the common hazel-nut, and spread it out flat, and then in like manner take off the skin of the walnut or the hickory-nut and spread it out flat also, how very much greater surface we should get from the convoluted membrane than from the smooth one.

Now such a resemblance obtains in the brains of reptiles and birds on the one hand, and the mammals on the other. The reptiles and the birds have smooth brains like the kernel of the hazel-nut; but the mammals, especially the higher ones, have their brains fluted or convoluted at the surface; hence we speak of them as convoluted brains; that is, brains not smooth, but in folds at the surface.

Physiologists have shown that it is not merely the size of the brain that is concerned with intellectual manifestations, but above all, the amount of the foldings, or convolutions, since that determines the amount of brain surface. And all this is because the brain substance is chiefly of two kinds, the white substance and the gray substance; and the general intelligence of an animal is in proportion to the amount of gray substance in its brain. Now as this gray matter is only a thin layer just underlying the outer membrane, it is evident that the greater the surface the more there is of this substance; and, as I have shown, the convoluted brain affords the largest surface.

I have mentioned the name given by Cuvier to the seals, — the beautiful-headed animals, with their thin skulls and finely convoluted brains. But I like the old aphorism, "Handsome is that handsome does"; and perhaps, barring the personal beauty, I must claim what has just been said for the poor porpoise, — that "tub-at-sea,"

"land-lubber afloat," as some "old salt" would say. A "tub-at-sea"! What a libel! The porpoise is the most easy and graceful in movement of all the marine mammals, — also the most playful; so much so that they deserve to be called Neptune's kittens.

In fact, anticipating the ship-builder, our "gallant tar" got from the porpoise some good hints on naval architecture. If anywhere in animal locomotion Nature has given to man a model for ship-building it is not in any bird or fish, but in the aquatic mammals, the porpoise and the dolphin. A longitudinal section of a porpoise furnishes an outline combining the proportion of depth, breadth of beam, and length best suited to a ship for speed, strength, and safety. At the great yacht race in which the American "Volunteer" beat the Scotch "Thistle," how few knew that the builder of the lucky craft had studied sections of a dolphin made for him by a naturalist.

The porpoise is neither a "lubber" nor a "tub-at-sea" to him whose eyes see truly. I have watched with intense interest their gambols in the ocean, my enjoyment only damped by the delight of a passenger in shooting at them "just for fun." And even then their conduct was sensible, for when one of their number was wounded the whole herd abandoned the ship.

Porpoises are eminently social, herding in vast numbers. Says a learned and elegant writer: "A prettier sight can scarcely be conceived than a large shoal frolicking, dashing, and springing in all manner of fantastic curves with an amazing rapidity; and woe betide the schools of herrings, mackerels, and pilchards that are followed by these rapacious creatures!"

Dolphins and porpoises are pretty close relations. I suppose my readers generally have heard the fable of Arion. It is classic, but incredible. This person was a noted poet, and the sailors were set on casting him into the sea. He sang one of his songs, which so entranced the dolphins that one of them bore him safely to land. Now with this tough yarn in his mind a distinguished naturalist expressed himself in this manner: "The brain of a porpoise is quite wonderful for its mass, and for the development of the cerebral convolutions. And yet, since we have ceased to credit the story of Arion, it is hard to believe that porpoises are much troubled with intellect." But as "seeing is believing," this distinguished savant had cause to change his opinion, when the tame porpoises of the great Brighton aquarium astonished the visitors by their wonderful performances.

A pair of porpoises just captured was given an immense tank of a hundred feet in length. They very soon learned to know their keeper, to whom they became amiable pets, taking their food from his hands as gently as a pet dog from the hands of its mistress. They even let him toy with them and pat and stroke "their slippery india-rubber-like backs."

These porpoises showed themselves to be strongly actuated by curiosity. It was the custom to put some other object, such as a large fish, into the tank. Every new arrival caused a careful inspection; and woe to the intruder if not welcome! Size made no difference; the two literally lorded it over their domain. It seemed at first as if there were familiarity,—as if they should say "Pray who are you?" Then came contempt, then

unremitting persecution. In fact, if the new arrival were at all formidable, their action would be in concert, like that of the two dogs whose story has been told. Some dog-fishes, known as *Acanthias* and *Mustelus*, from three to four feet long, were introduced. Each porpoise would seize one at a time by the tail, and swim off with it, shaking it as a dog does a rat. The poor things quickly succumbed to such brutal treatment. A fine sturgeon, six feet in length, was put into the tank. That was enough,—the two tyrants joined forces for the onslaught, and the stranger's life was only saved by taking the animal out in a lacerated condition.

It will be remembered, that of the two dogs whose exploits were told one was the leader. It was noticeable of the two porpoises, that one had an influence over the other; in fact, at feeding-time this one always secured the lion's share of the food provided. Now it should also be mentioned that this leader was the first to become tame,—that is, he first took in the situation. The other was more shy; and as is usual, this very shyness indicated that his intelligence was not up to that of his companion.

I have mentioned curiosity as a mental trait in the porpoise. But I must narrate the experience of a Mr. Williams. He says he once made the voyage from Constantinople to London in a small vessel laden with boxwood. The passage was so slow that it took nearly the whole summer; and the ship being often becalmed, the porpoises would play around it in great numbers. Being told by the sailors that no sharks were about when the

porpoises were near, he was emboldened by this assurance to try the water. He says: "I often plunged overboard, and swam towards the porpoises; and they would surround me in a nearly circular shoal for company, and direct toward their strange visitor an amount of attention which should be dignified by the name curiosity." A porpoise must breathe the air at very short intervals. This necessity would afford a momentary arrest of their scrutiny. But after each sobbing snort they would resume their investigations, "sometimes approaching uncomfortably near, and then darting off to the circumference of the attendant circle."

Now let me observe, the more we find animals amenable to the control of man, the higher is their intelligence.

The Porpoise as a Fisherman.

East of Queensland, in Australia, is a land-locked body of water known as Moreton Bay. There are two islands almost parallel with the shore of the mainland. These are Moreton and Stradbroke. Were they united they would make a narrow belt of land about sixty miles in length. Their separation forms a small strait, which connects the bay with the ocean. This immediate region abounds with charming scenery.

The story is strange but true, that the porpoises which frequent this bay are made to serve the necessities of the poor savage inhabitants of the place—that is to say, it was so upon a time. They recognized them as "their tame porpoises." When the exploring vessel, the *Herald*, came there, these simple beings be-

sought those on board not to shoot their porpoises, as they were their food-providers. And this was the method of the service. The porpoise had no fear of these natives, as they never injured them. They would gambol near the shore, seeming to enjoy the presence of these savage friends. Now when a shoal of fish appeared in the offing the savages made the fact known to the porpoises, by hoots and clamorous sounds. The herd would at once make for the school, acting as outriders, and while eating enough to satisfy themselves, would drive the fish up into the shallower waters within reach of the expectant natives.

The animal known to us is one of several species, and is common to the shore-waters in the East. It sometimes approaches our Eastern cities in bands of six or a dozen, and attracts attention by its graceful pitching and rolling in the water, at the same time puffing and blowing. This is the Atlantic porpoise, *Phocæna communis.*

Thirty years ago it was often seen in great numbers in Raritan Bay. To us the sight of a shoal of porpoises is full of interest. With what a rhythmical movement these monsters will gambol in line, one huge fellow taking the lead, as if he were the admiral of the fleet, and every one behind duplicating his movements, pretty much like the play of boys, "Follow your leader."

I remember an old fisherman narrating to me the capture of three porpoises at the mouth of a small creek near Keyport, N. J. A number having ascended it at high tide, the fisherman stretched a sturgeon-net

across the stream, and thus intercepted their return. It happened in the old man's young days, and he was disposed to dilate on the profit of the incident in oil. But the one point which interested me was his description of the squealing of the terrified animals. "They fairly whistled, almost like a boy!" he exclaimed.

I could not do less than entertain the old man with some account of the great White Dolphin, *Beluga borealis*, whose capture exacts the best skill and highest daring of the fishermen of the St. Lawrence. So wary is this creature, that a row of stakes loosely set across the river, for a scare, will be avoided, and they will betake themselves to the open space at one end of the row, where the nets are laid. Here some are caught, but those which escape will give similar places a wide berth ever after. As for noise, those white dolphins when on a lark can be heard a mile away. And the sounds they make are varied. Now it is like the shrill piping of a loon, and anon a loud hoarse sound not unlike a bark. And with this whistling and bellowing there is real play; even the cow dolphin joining in the sport, as she carries, in strange contrast of color, her black baby squatted in a depression of the back near the tail.

Now it is characteristic of intelligent animals, that they will in this way manifest their sense of the situation; and similarly does the great elephant in its trumpeting and whistling show its appreciation of pleasure or apprehension of calamity.

These porcine mammals of the sea follow the mi-

grations of the *Clupidæ*, the family of fishes in which the shad, menhaden, or moss-bunker, herring, and others are found. Thus we see it especially in the spring and fall. As food is his object, the porpoise keeps in their wake, and that of the fierce and active bluefish, *Temnodon saltator*. Not more terrified would a herd of gazelles be before a band of tigers, than is the moss-bunker, *Alosa menhaden*, when pursued by the bluefish. The poor things crowd like a moving bank, compacted by the devouring pursuer; and the pursuer himself, so intent upon his victims, is in turn pursued; for the porpoise is pressing behind.

Porpoise Sport.

A friend of mine, the commander of a coasting vessel, is responsible for the following story: "It was early fall, and I was running with garden stuff from Keyport to New York. I saw several porpoises. They were going in a line, much as you always see them, but the two head ones had each a bluefish, with which it played as a cat does with a mouse. They were some distance off, and I might be mistaken about the height; but each porpoise would throw up its fish high into the air, may be ten or twelve feet, as nigh as I could judge. Just after each toss-up of the bluefish, each porpoise would duck its nose, by a forward pitch of its body."

"That was indeed surprising," I said, and asked, "Did each porpoise catch the fish when it fell?"

"That I could n't say, but should think most likely not. I think it picked the fish up each time. One of

them I know tossed its fish up at least seven times in close succession, before it stopped. I am satisfied, too, that it was one and the same bluefish all the time."

"Well, well," we thought. "Then this queer, ogreish fun is found alike among porpoises, seals, and cats! And whether among animals or men, is not this, the grimmest, also the lowest humor?"

A question arises as to the kind of fun this is, namely, its mental character. Is it the sport of a boy tossing and catching his ball; simply that enjoyment which comes of the exercise of skill? Or is it like the gambols of a lamb or a kid, mere animal gush, or overflow? I think it was like neither. It had in it a tinge of malicious exultation, the strong making game of the weak. How a cat will purr while it tosses the poor mouse, still alive, and perhaps even unhurt. But then, I know Tabbie has her apologists.

Still her complacency is grim. It is identical with that madness of power which has crimsoned so many pages of the history of man. We may not wonder that the carnivore enjoys the excitement of pursuit, and the success of capture. But as a rule the beast is satisfied when hunger is allayed. Tormenting the captive is the exception. Like man himself, some animals will capture and destroy for no other reason than that there is opportunity, and they find gratification in so doing. Perhaps it is the pleasure of exercising skill.

But on this matter of the animal mind one more chapter must suffice, and this shall be given to a special aspect of mental manifestation.

CHAPTER VIII.

ANIMAL HUMOR. — CONCLUDED.

Craftiness in Animals.

IT would be a big task to summon for review all our aquatic merry-makers. They would prove a host for number. In such an inspection we should need to invite many of the finny tribe. And yet in this our shortest chapter some note must be taken, though in a rambling way, of a few other beasts.

Even the common ass upon interview proves to be an uncommon creature. Mr. Nefacias in town has a talent for not doing things expected of him, however pressing the occasion. He is regarded as "the village kicker, and contrary as an ass"; all which means that these two individuals are gifted with equal endowments.

My neighbor keeps a little Spanish donkey for the amusement of his children. Though never with much enthusiasm, the animal has an eye for duty after a fashion, having a zeal according to knowledge.

He knows his master's children, and minds them because they know him. When they ride, things go

nicely, for they are well up to his antics, and can dodge his subtle devices. But it is very different when a visiting child attempts to enjoy the pleasure implied in granny's simile: "Short and sweet, like a donkey's gallop."

I have witnessed the procedure, and, speaking in a past tense, the little beast was very mannerly and methodical even in his meanness. He would start well, and high would rise the glee and laughter of his little rider. But so soon as the speed was attained which was predetermined in the donkey mind — presto! what a change! Of a sudden the long ears would fall back, — the head drop, — the front feet be set forward like two braces, and the beast stand stock-still! Its momentum so suddenly checked would be imparted to the little rider, who would be shot over the animal's ears, feet in air, and headlong to the ground.

Thus relieved of his unwilling load, "the patient ass," as the poet has it, his impatience covered with a demure aspect of countenance, and an equine equanimity of soul almost philosophic, would turn stableward. There would be no unseemly haste; but he would seek his crib, and there seem given to retrospection, as thinking over his adventure in profound asinine astuteness.

The most intelligent animals manifest a common human weakness, in that, when on evil purpose bent, like many a professional rogue, they will give themselves away. Certain traits of conduct betray their cunning. I think this mingling of indiscretion with foxy wisdom is marked in the horse and dog fami-

lies; and in part it is due to domestication, which is really to the animal an education.

I once bought a span of pretty Canadian ponies, and went to the stable to look at my purchase. The dispositions of the two differed greatly. One was named Jess and the other Joe. I patted Jess on the neck, and it was taken kindly. I then did the same for Joe, when to my surprise the beast sprang at me with a snap of his jaws, which I dodged, and by barely a hair saved my visage from defacement.

"Oh! ho!" said I, recovering myself. "Come, come, my fine fellow! your education is defective! You have yet to learn who your new master is."

Aware that my not holding my ground at the first assault would embolden the beast to attempt a second one, I stood stockstill, with my eyes fixed upon the brute's ears, and my right fist clenched. Sure enough it proved just as I expected. Those tale-telling ears fell back, and the upper lip curled up, revealing his teeth, and he came to pay his respects to me the second time. He was now met half-way. I summoned into my good right arm all the strength possible, and with my fist planted a blow between the two nostrils. How the brute's eyes did bulge! He seemed dazed with astonishment. It was manifestly a new experience.

Joe was undoubtedly more intelligent than his mate; and in this problem of finding out his master he proved himself an apt scholar. He never forgot this lesson; and knew his place to his dying day.

I have elsewhere mentioned the funny caution given

me by a muleteer, when with my little boy I was standing too near to one of his mules. He called, "Take care, Mister! or that critter 'll stoop up at you!" The man's originality amused me; for it precisely describes the act of kicking by these animals, as they prefer to use both hind legs in the operation. Now, to do this the forefeet become pivotal. The body for the nonce is balanced upon these feet, as the forward part of the beast goes down and the hinder part goes up; thus he "stoops up" and kicks at the person behind.

I have heard of the amusing way the muleteers of a certain country have to make this "stooping-up" impossible. A long stick with a crotch at the upper end is suspended under the animal's head, the lower end being but a very little distance from the ground. When the beast is plotting mischief, he of course from habit and necessity tries to drop or bend his head forward, then the stick touches the ground, and the crotch checks the descent of the head. Thus the pivotal action of the machine is instantly arrested, as if it was thrown out of gear. As this sudden obstruction of the animal's freedom is of a kind that it cannot get accustomed to, there is a diversion of tendencies, for the head goes up instead of down; hence the kick behind becomes so impracticable as not to be re-attempted for some time.

One breed of canines I have never acknowledged as pets, owing to their incorrigible craftiness. The Spitz dog is so like the Esquimau dog,—he has too much of the wolf in him. He will even bite the children upon their teasing, when a better dog would forbear.

I think I have seen this impersonation of deception feign to appreciate a little fondling by a stranger for the purpose of getting a good opportunity to bite. To me the very name of the breed seems significant,— Spitz! a snappy, spiteful spitfire. And there is such a precision of method in his duplicity or craftiness. He will come up to you with a dash of priggish impudence which you mistake for harmless familiarity. He will seem to say: "Look here, sirrah! Who are you?" Then, as if in an apologetic way, as one who sees that he has been a little too fast, he will pause. Is he thinking better of it? He sidles up to you! You feel like patting him with your hand. Don't trust him! Just watch! He makes believe to be looking from you,— and his head is pointed away. The deceitful cur! He has one eye upon you all the time. His ears are set ominously, the tail is immovable and depressed. A vicious snap, and a sharp yelp, and he is away out of reach of your foot or stick. He has bitten you, and the brute in that yelp of exultation adds insult to injury. A man without humor is hardly safe; and beware the dog whose waggery is gone!

Some Ratiocination.

I recall the instance of an old rat over-reaching itself by excessive cunning. A friend in the pork business was greatly annoyed by these vermin. After much effort he seemed to be rid of them all except one old rat. He was portly, and in craft fully equal to his patriarchal years. He had successfully defied all

poisons, gins, and snares. He was often seen,— which made the case the more provoking.

It was resolved to make a new trap, and different from all previously used. So a long box was constructed with a drop door at each end. The bait was suspended inside at the middle of the box. The new trap was set, and a watch kept up to see how the old rat would manage.

He soon made his appearance, approaching very slowly, and with the utmost caution, the ebony eyes taking in the situation with admirable circumspection. The big box, open at both ends, caught his attention. At a safe distance he could look through it, and could see the meat hanging inside,—a very tempting sight for a rat that is hungry. Cautiously he drew closer, and looked through from one end. Then just as cautiously he made an inspection at the other end. He then went slowly around it, looking and sniffing; in a word, thoroughly investigating the new-fangled machine. Three times was this careful examination made, when the rat drew off a few feet from the box, and squatting kept his eyes fixed upon the bait.

It was now apparent that the animal had made up its mind: it had resolved to carry off that meat by strategy, either in whole or in part. The plan was to make a dash through the box, snatching the coveted morsel, or a bite of it, on the run. He would show himself, as he had done before, too sharp to be caught in a trap. He did not know the wise saw about "the best laid plans of mice and men." But that other proverb he appeared to know,— "Nothing venture, nothing have."

The rat now seemed to gather itself up for the final spring. There was a swift plunge, and a dextrous pull at the meat in passing; when down came the drop-door at each end, and the poor brave thing was caught at last. The cry which went up from the captive was truly pitiful! it was the piercing squeak of despair. His long career of evasion had reached a rueful end. The boss deceiver was ensnared by his own greediness. As will happen to "artful dodgers" of a higher class, the wise was caught in his own craftiness.

The above was written just before leaving home to attend a meeting of a society in a certain college. I was made the guest for the night of one of the professors. This gentleman had a tame rat, which was a cherished pet of the family. It was a female and quite prettily marked. About half of the body was a clear ermine-white and the other part a glossy sable-black. The professor smoked a wooden pipe, while the gentle little thing ran over him, snuggling in the back of his neck, then diving into his pockets, and taking other personal liberties, in a general and uninterrupted way. I was surprised to notice a trick in which she indulged, as often as the notion took her, when the professor sat down to his "smoke." As soon as her learned master has filled the bowl of his pipe with "the weed," before he has applied the match, Noozie is allowed to help herself; and she actually does take a nip of the tobacco, and seems to eat it!

A letter from the professor informs me that since

my visit, probably impressed by my criticisms on her conduct, Noozie had mended her manners, for she had apparently abjured the weed. He also added, that she had begun to evince a taste for literature; for while he was smoking and reading his magazines and journals, she would now insist on making an extract here and there literally tearing the article to pieces like a new-fledged critic.

I think this interesting pet must have come from the black rat, which once possessed the land. Her size and form indicate as much. Otherwise the black part would indicate melanism, as the white did albinoism; and yet her eyes were jet-black, and not pink, as is general with albinos.

These chapters on Animal Humor are now closed. And what of it all? This much surely, — herein is a revealing of the inner life of the lowly ones in the great animal scheme. These merry-makings and mishaps are the lights and shadows of the animal mind, which like our own is many-sided.

The duty now devolves in what follows to deal more precisely with individual animal biography, after clearing up some points of structure. Our treatment will be more zoölogical, yet shall we see semi-human traits cropping out all along the line.

CHAPTER IX.

SOME QUEER ANIMALS.

The Concealed Meanings in their Structure.

WE have had thus far an entertaining time, and there are many pleasant things yet in store. We have seen something of animal mind in its many-sided moods; that is, we have seen a great many mental manifestations of the so-called "dumb creatures." Of course we have been dealing with animals of exceptional intelligence, the most of them being such as are put by the naturalist under the convenient word *Educabilia*, because they are capable of being tamed, hence instructed.

It will be wise now to turn a little while from the mental to the physical, the internal framework of the animal. In doing so I shall again deal with creatures of an exceptional character; but such as are low down instead of high up the scale of animal rank. My purpose is to pry into some secrets in the skeletal fabric of certain creatures of seemingly erratic construction; and I think it quite safe to promise that, if our attention is fairly given to this subject for a few minutes, there will result a large measure of reward.

I remember, a few years ago, a fun-loving artist made an amusing book. It was a comical affair, for it contained a series of pictures of animals of the most grotesque forms. Of course they were the creation of a playful and ingenious imagination. It was really zoölogical "crazy-work," but upon a plane of art. The pictures were puzzles of anomaly; for without seeming to violate propriety, or probability, the artist had constructed drawings of animals with the most incongruous make-up of parts. One of his creations, for instance, might have an eagle's head and the limbs of a lion, the body above armed with the scales of a reptile, and below clad in the feathers of a bird, while the hinder part was taken from the extremities of a fish.

Now, unless we get at the hidden meaning in her work, we may almost believe that Nature was a similar humorist in "the beginning." As Agassiz regarded it, the Creator had his plans of animal forms, and of life-eras on this earth. A great Branch of the animal kingdom would include in itself several families, and in each family several orders.

To illustrate the above, let us mention as a Branch the Vertebrata, that is, all creatures possessing the spinal column. These would be naturally divided into families, the number at least being five, — Mammals, Birds, Reptiles, Amphibia, and Fishes. Now the embryologists, taking a species of the mammals, show that in its growth at its beginning of life there may be read off as it progresses a shadowy outline of all the families below it in the Branch to which its class belongs.

But I must defer considering this topic of embryology

until something has been said on the apparent eccentricity, and even monstrosity, of the early animal forms.

The other day I went to the brook in the meadow to get some fishes for my aquarium. Crossing the fence I stepped into the rank herbage, when a tiny squeak smote my ear, and stooping to learn the cause, I found to my grief I had trodden on a little jumping mouse, the *Zapus Hudsonius*. I took up the grotesque mite of a mammal tenderly, and felt very badly at seeing it after a few gasps die in my hand.

Its innocent oddity, and seeming disproportion of limbs, set me at criticising. At first came the dubious compliment — a pretty bit of eccentricity — then in my still vainer wisdom I queried if Nature could not have turned out a better job while about it? These fore-limbs, I argued, so ridiculously short, and the hind ones so preposterously long! Why, thought I, if one of these little beings should try to run, it could only bump its nose upon the ground. But, fie on all such questionings! They are neither wise nor becoming.

The simple trouble with little Zapus was, it had been caught at a disadvantage, like many another body much better endowed. The tiny thing had got for a moment entangled in a mat of grass and weeds, which made jumping, its specialty, impossible. Many a time the little fellow, — thanks to this disproportion of parts! — had shown himself too clever for the wiser folks. His clean leaps in zigzag lines had completely outwitted the night owl, for all his wisdom, and baffled the mink, with all his snaky litheness. Neither one

was at all times equal to the dodging tricks of this tiny creature. Those ten-feet leaps in diverse directions through the tangle of the meadow have often proved too perplexing to the pursuers of the little jumping mouse.

Though not very probable, it is not impossible, that this sad mishap was due to a different cause from the one I have just mentioned, — the dense weeds. Many animals indulge in a long winter sleep, and such are said to hibernate. Others there are that are given to immoderate slumber in summer. These are said to æstivate; and this habit is practiced by some of the out-of-door mice. But I dare not assert that Zapus is one of these little sleepy-heads.

And as to this inordinate length of the little fellow's hind limbs, it almost seems funny that, long before man was made to be a critic on her works, Nature delighted in this type of living forms, manifesting it in many animal structures; and some of these were the most titanic in size and strange in aspect.

It was once my good fortune to discover some bones in a stratum of the formation known as the Cretaceous. Upon these fossils Professor Cope erected the genus *Ornithotarsus*. This strange word really means the bird-ankled-being. It must indeed have been a monster, in form so strange and in size so prodigious! Moving upon its huge hind limbs, which were six feet long, with its forward limbs so comically short, when walking this animate bulk, camel-like, would sway from side to side, though not with equal grace, for it would be as if that "ship of the desert" should careen on stilts.

This immense beast browsed on the twigs, leaves, and fruit of the forest-trees; and how admirable the adaptation! A great heavy tail, so set at the will of the reptile as to rest upon the ground like an inverted bow. This with the two immense limbs made a firm tripod. Thus this creature, some twelve feet high, with its short fore-feet, or hands, could pull down the high branches to its great uncanny mouth.

Later on in the life of our Mother Earth Nature evolves another type on a somewhat similar pattern; but though retaining a good deal of the reptile, there is in it more of the coming bird. And as that bird-reptile was long-limbed, and in every way monstrous, so the more recent reptilian-bird is equally strange. As being the best known, and the most recent, may be mentioned the probably extinct Moas of New Zealand,—birds whose limb-bones were as strong as those of an elephant. In fact, these birds have been called "the elephant-footed Moas." One species was thirteen feet high. The egg of this bird was ten inches long and seven inches thick. If those improvident Maoris who killed off these birds for food ate boiled eggs in the modern manner, they would have needed egg-cups as large as a man's hat.

Have we not by this time reached the conviction that Nature works on lines of method, and makes no leaps. In creating the true reptile something of the lower amphibian, namely, the frog, was conserved in the plan. And the earliest birds carried in their structures a good deal of their reptilian ancestry. What, then, might not be expected of the earliest mammal? Must not it, too, be a composite being, looking forward to the less com-

posite, or more beautiful beasts, of the present epoch? and also looking backward to forms more complex, or mixed in structure, hence more lowly?

How often has it given me an exquisite pleasure to read the significance of certain relics treasured in some households. Amid a lavish presence of modern art, and almost dissonant to their surroundings, one sees here a bit of quaintly fashioned furniture, and there, an odd piece of delicate porcelain. Each bit has its domestic history, and is an heir-loom. In a word, I find myself in the home of one of the "old families," and these out-of-the-way articles are ancestral remains, mementos of the past.

We speak of the New World, meaning the Americas. But it is an ancient land, and is, geologically, the Old World. Some of its living animals have their nearest representatives in the fossil remains of the bygone ages of the earth. Notably is this true of the opposums in South America, and the one species of the same in North America. These creatures, like oddities among recent forms, are relics of a former geologic age, survivals of a great fauna that otherwise has passed away.

But, leaving out New Zealand, Australia is the one exceptional land. It completely represents an ancient geologic age with its antique forms of life, both of animals and plants. This strange country has two small animals of such incongruous structure as to have caused much discussion among learned men. These are the *Ornithorhyncus* and *Echidna*, or, as the residents call them, the Ducked-billed or Water-mole, and the Porcupine Anteater.

A First Introduction.

I was walking up Broadway, in New York, many years ago, and my attention was attracted by two curious stuffed animals in the window of a furrier's shop. I went in, and the following colloquy occurred:

"Would you please let me see those stuffed animals in your window?"

"Have no objection. That's what they were put there for."

"Yes, but I want to examine them. Would you let me take them out and inspect them as a naturalist would like to do?"

"Ha! I see. Certainly."

So saying, he kindly took the objects from the window, and set them on the counter. I became absorbed in the study of those queer forms. The man asked their names, and was told that the one with the spines was the *Echidna hystrix*, the Porcupine Ant-eater of Australia; "and this," said I, patting the other one, "is the Platypus, or Ducked-billed Mole, the Water-mole, *Ornythorhyncus anatinus*."

"The what?" exclaimed the shopman. "Please say it over again!" It was repeated, when he gave me a card and pencil, with a request to write the name for him; which done, he put the card into his pocket-book, and said with a chuckle, "Won't I bother them at the spelling-bee to-night!"

For myself I got at harder spelling than the shop-keeper ever dreamed of. Before me was an animal of a singular shape, about eighteen inches long. The toes

were webbed like a duck's. But the leathery web extended far beyond the points of the claws, as if the ribs of a fan should fail to reach the outer edge. Now for swimming these leathery fans, so adjusted, were admirable.

But I also noticed that the limbs were very short and very strong. That gave the sharp nails great efficiency in excavating burrows, — a mole-like habit, while a muscular command of that extended web could retract or draw it up or on the ball of the foot, so as to be out of the way of the claws, or toes, when digging. In the structure of this foot was a beautiful combination of the foot of the burrowing mole and that of a swimming-bird. On the heel of each hind foot I noticed a spur precisely like that of the male barn-yard fowl. The bill, too, was almost exactly that of a duck, and, as I had learned, it had on its edges a fine outfit of nerves, so that, like the duck, when probing the mud it could distinguish and separate its food.

The fur of Platypus had a velvety "feel," and was short, close, and brown. The hair on the tail was longer, and somewhat harsh to the touch. The entire pelt had some luster, and, like the feathers of a duck, was well fitted to repel the water from the skin. Herein seemed combined in one the land mole and the aquatic duck.

So let us not wonder at the older naturalists, who in their perplexity loaded this little animal with learned names. They were, in truth, epithets of wonder. One of these was a triple name, — to wit: *Ornitho-*

rhyncus platypus paradoxus,—all which when turned into the common speech did signify, "the bird-billed broad-footed enigmatical beast."

But what has been said concerns only the exterior of the animal; and mere outward form is sometimes deceptive. Here, as elsewhere, it is desirable to find truth in the inward parts. Hence, what about the creature's framework and its physiology? Under such an examination this anomalous little beast proves to be a composite of seeming inutilities. Its skeleton is made up of parts so diverse in nature as to seem borrowed from the amphibian, the reptile, and the bird, while other parts of the bony structure are those of a marsupial or pouch-bearing mammal. And these so-called marsupial bones are strong in Platypus; and yet, while indispensable to the Kangaroo, so far as science can determine, for this strange creature they subserve no functional purpose whatever.

And this anomalous little thing has also some decidedly bird-like features in its skeleton. In a true bird are the coracoid bones, which are processes or extensions of what is the scapula or shoulder-blade in the mammals. The coracoids, in virtue of their strength and the position they occupy, are necessary to the bird, for they play the part of supporters to the wings in their powerful downward strokes, and they protect the heart, lungs, etc., from this violent action! The Platypus has these same bones, and they are even more robust than in the bird. These bones also seem to have no function.

Did you ever see a bird wink? The curious fact is,

that a bird winks with its eyes wide open! The truth is, it has a third eyelid, very thin and transparent, known in science as the nictitating, that is, winking membrane. This can be drawn over the ball with the eyelids proper wide open; hence in moderating the light to birds looking at the sun, or for the diving-birds when under the water, enabling them to cover the eyeball, and yet to see, this membrane is of great service. This same third eyelid is in the eye of the Platypus, and serves it the same purpose that it serves the duck, as the Platypus is pre-eminently an animal whose element is the water.

If we look at the skull of any animal of high rank, we shall find that it is marked with sinuous or notched lines. These lines are called sutures, and they show the delicate mortising of the pieces of the skull. Now, in the lower animals, even the birds in adult life, these markings on the skull are not seen. In other words, the sutures are smooth. All this is true of the Platypus, that is, its skull is bird-like. So of its brain; like that of a bird, it has almost no convolutions. Like the bird, too, its ears are not seen, for it has not the conch, or external ear. This organ is a simple circular opening into each side of the head, very near to the base of the bird-like beak.

As to teeth, what it has to serve the functions of such are not the bony structures of other mammals, but simply horny ridges. Curiously, some of these are on the animal's tongue, — a true reptilian feature. And there are also in the bony skeleton points of resemblance to the reptiles, and even to the lower amphibia, the frogs.

And besides the above coincidences in the bony frame of the Water-mole, or Platypus, and which to a large extent occur also in the Australian Porcupine, or Echidna, both of these animals have physiological peculiarities, so remarkable for mammals, and so suggestive of the birds and reptiles, as to cause them to be separated by the systematists from all the other mammals, and put by themselves in an order under the name *Monotremata*. And this order is set at the very bottom of the existing scale, as indicating the beginning or lowest form in the Class Mammalia. So we need not wonder it was often asserted that this bird-like little beast laid eggs.

As we have been discussing a rather abstruse topic, and the points made have been somewhat scattered, it would be well to find a short summary, something like what an historian prepares for his work. Such a synopsis aids the mind to understand and the memory to retain the subject in hand. If the works of Nature consisted of merely hap-hazard or incidentally connected facts, it could hardly be expected that a summary on the line of method would be possible. But has not Nature a plan? Is not "order Heaven's first law"? Hence animal creation means progressiveness of structure upon a scheme, and even upon sections of a plan.

CHAPTER X.

HIDDEN MEANINGS.

The Mystery in a Bird's Egg.

WHEN Kepler the astronomer was evolving with his mathematics the planetary movements in space, finding that he could formulate their laws, he paused in his work, and said reverently: "But I am thinking the thoughts of God!" And not less reverent should be the student in Natural History,—since, though somewhat nebulous, there is recorded in some of the processes of life briefs or synopses of the Great Lawgiver's processes or steps in establishing the order of animal structures.

But there was a great-minded man—Louis Agassiz—possessed with a reverent spirit and noble conceptions, who *did* see "the genius of God" in the skeletal fabric of a living organism, as revealing the pedigree of the creature, and its place in the succession of living forms.

When it comes to watching the growth of the animal embryo, there can be noted in the successive advances a condensed exhibit, a changing picture, of the phases of procedure or order observed in the creation of a great group, or series of classes of animals. Take, for

instance, but one of the creative schemes,—the one on which that Branch was produced which embraces all the actual forms in the several classes of the frogs, the reptiles, and the birds,—and we shall find their pedigree or succession recapitulated as if in a synopis, in the successive unfoldings of the embryo in the egg of a bird. Thus in a few paragraphs let us try to read this one of the pedigrees of life-forms, as unfolded in an incubating egg.

The Parts of a Bird's Egg.

The general idea is that an egg is made up of three parts,—the shell, the white, and the yolk. To these the more knowing ones add "the tread," or "eye." Let us be more particular, though we cannot tell all; so much could be said on its chemical composition. First, there is the outer shell. This is mainly composed of a lime carbonate, and so is really a capsule or box of marble. Inside like a loose lining is a thin but tough membrane mainly of albumen. This membrane serves as a sack to contain the glairy fluid called "the white," which is albumen. At the "big end" of the egg, between the shell and the lining membrane, is a small space filled with air, which is heavily charged with oxygen. Near the middle of the "white" or albumen is the yellow fluid known as "the yolk," which also is enclosed in a thin membrane of its own, by which it is enabled without mixing to float on the "white" fluid. This yellow mass is composed of so many chemical combinations, that only a few

of the simple substances can be mentioned here,—sodium, potassium, phosphorus, sulphur, and lime, etc.

Situated in this storehouse of chemicals, from which a living thing is to be elaborated, is a pretty object of a yellowish-white color. It is well to one side of the yolk, and is very improperly called "the tread." This is the germ, the spot of mystery, where the life-processes will start in the building of the embryo chick. This germ is swung upon a band, like a tiny hammock, whose ends are at the two poles of the yolk. Out of this comes a curious and very interesting result. On whatever side the egg may lie when hatching, this little swing is sure to keep the germ uppermost, so as to get the heat from the mother sitting on the nest. But when the organism has progressed what is to prevent the little thing from smothering inside the marble casket? Now comes in the function of the air vesicle at the large end of the egg, surcharged with oxygen; this enables the embryo to breathe. It is thus a living tomb, from which will emerge a vital and complex form.

I have now mentioned seven functional parts of the egg. No technical terms have been used, but some must be introduced, and this will bring the matter up nicely in review. The first was the shell, then came the thin lining membrane, which also enclosed the white or albumen. After this the little cavity at the large end of the egg, called *vesicula aëris*, the vesicle of strongly oxygenated air. Next the yellow mass, *vitellus*, or yolk, and its thin membranous envelope. Lastly the hammock, or swing, and the

suspended germ, or *cicatricula*, so called, because it resembles a little scar.

What goes on Inside the Egg.

I cannot stop to repeat what is said about the chemical forces, in respect to their rôle in the origin of life. As science has not yet proved much on this point, it is better to abide by the old-fashioned phrase, the life-force; for we have reached a point where its use has become necessary. By the application of the warmth of her own body to the egg the mother bird is to evolve a true counterpart of herself. Let us watch the process.

At first the yolk is the pabulum on which the started organism is to be fed, and the start of life for the embryo is in the germ or *cicatricula*. There is a legend of Columbus, that he challenged the courtiers to make an egg stand on end. Each one tried, and all failed. He took the egg, gave it a smart tap at one end, thus flattening the shell, and the thing was done. It was at best a trick. Had Columbus been asked why an egg cannot stand on end, but must lie on its side, perhaps that great man would have met his match. The movement of the little hammock, and its incessant effort to swing the germ to the upper side so to get for it the steady heat of the incubating bird, tells the story.

Consequent on the heat imparted to the egg by the sitting bird, the germ spot is affected. Certain molecular movements take place, and the phenomena of

segmentation set in. Leaving this technical word to be explained further on, it will suffice here to say that in brief it means cell-making, as all life forms are made up of these, which are the living bricks in the coming structure. This cell-making occurs in the white, or albumen, the yellow being reserved as the pabulum of the embryo.

This cell-making begun, the energy is pushed throughout the white mass; and what is called differentiation is now fairly started, — the going of these cells into their proper places, the laying of the living bricks in the edifice. Soon this yellow ball, the yolk, on its outside will become streaked with crimson thread-like lines. These are the primitive veins or blood-vessels of the forming structure.

Now that these carriers of the purple life-currents are laid down in wise adjustment, the work goes bravely on. At first nuclei can be observed, specks of matter, resembling nothing else feeding on that golden lump of life-stuff. Around these specks enlargement like growth sets in.

The mystery in the laboratory thickens. It is now plain that the elaboration of a living thing is going on. The fact becomes apparent that these nucleous spots are the beginnings of the organs of the fast-forming structure. Erelong certain elongations of the differentiated matter become noticeable; and these are the limbs of the little creature, the rafters of the frame that is getting built up under our eyes.

But time is wanted to follow this constructing further. The growth of the embryo now is very rapid, and

soon both the material supplies of the building, namely, the albumen and the yolk, are all used up. When all resources are consumed, the embryo, with the sharp little scale on the tip of its bill, cuts off the top of the shell, and emerges a callow but complete bird.

The Lesson in the Egg.

And what is a bird? Looked at in respect to its place in a system of classification, it is the highest member of a group which includes in it the classes known as the birds, the reptiles, and the amphibia. Hence structurally it is related to the lizards and the frogs; but it, the bird, is at the top. It is the finish of that group of living creatures.

I have not room in which to give the entire diary of the embryonic life of a bird; hence the briefest sketch of only a few days must suffice.

By the close of the first full day a tiny tube is laid down, about one twelfth of an inch in length. In this is the spinal cord. Second day, the tube begins to divide into short equal lengths. This is to be the vertebral column. The third day shows the rudimentary heart, which even pulsates. Ere the fourth day closes the circulatory system is well forward, as the veins are distinctly apparent. Fifth day, the limbs are fairly started. Sixth day, the heart receives its sac, or casket. By the close of the seventh day the alimentary system is begun.

But the growth of the embryo has been followed

far enough for our purpose. We have thus seen the foundations of the structure laid, and its framework and rafters set up. At this period the embryo shows some movement in the shell. The lower stages and forms are fast disappearing; for the chick is coming into view.

In this short period these few, namely, twenty-one days' hatching of an egg into a bird, the embryologist can note in condensed outline the brief of the Bird-maker's scheme of structure for that great section of life, in the plan of which was to be evolved first the frogs or amphibians, next the lizards or reptiles, and last the finish, namely, the birds. For, as a great naturalist observed, we may see in the embryo "a picture, more or less obscured, of the progenitor of all the members of the same great class." When that yolk began its short but rapid course of developing into an animal form, almost its earliest object indicated something of the frog; further on, something of the lizard; and lastly the bird, whose bony structure also when analyzed shows characteristics of all three sections of its class.

Having gained this knowledge of the inner meaning of animal structure, we can take up with greater profit the biography of these seemingly eccentric creatures, of which so much mention has been already made.

CHAPTER XI.

ECCENTRIC ANIMALS.

BY general agreement men will assign the same name to each one in a number of objects which possess marked similarities. Hence all are in accord as to the animal meant by the word *bear*. But though all bears have a general likeness, they do differ in some particulars; and we find by common consent these differences, expressed by prefixing a qualifying word. Hence come such terms as black bear, brown bear, cinnamon bear, grizzly bear, etc. Thus, though it hardly seems grammatical, we may call these double names, the first the noun-name, which belongs to them all alike, and the second the adjective-name, which denotes the particular kind of bear.

It is so in the scientific naming of animals. The first name, always written with a capital letter, is a noun, and denotes the genus,—hence it is known as the generic name; the second name, usually without a capital, designates the species, and is called the specific or trivial name. Take the systematic designation of the "Grizzly,"— *Ursus horribilis*, literally the terrible bear.

The little creature on which we dwelt so long was named by Dr. Shaw *Platypus anatinus*. The generic name meaning broad-footed; for when the web is extended for swimming, each of the front feet has a spread of over four inches in width. The trivial name, meaning duck-like, has regard to the form of the bill. The accepted name among naturalists now is *Ornithorhyncus anatinus*, the first word meaning bird-bill. The native names are Mullungong and Tambreet, about which, knowing nothing, I will observe a discreet silence. The whites call it Duck-mole and Water-mole; but Platypus is the name common to the books.

Its curious beak, so very like that of a duck, is always the specially eccentric feature which arrests the attention of the one who sees this creature for the first time. It was so when the earliest specimens were received in England. Many surprising statements had been made concerning the plants and the animals of that strange country, by which extravagant expectations of curious things were excited. But at first sight of this paradoxical creature credence was put to a severe strain. "Was it a freak of nature, — a nondescript, — or was it not more likely a fraud out and out? What! a beast and a bird in one! That is too much! The thing is surely a hoax, put together as a Chinaman does his mermaids." So talked the wiseacres. And even the sober naturalists were at first perplexed, doubting among themselves whether it might not be meant for a joke at their expense.

The first specimens sent to the mother country

were little else than skins, at best rudely stuffed. After a while the animal entire, preserved in spirits, gave opportunity for studying the creature. Dr. Shaw, an English naturalist, accepted the object as a genuine production of nature. He was its first describer, and expressed his astonishment in these words: "Of all the mammalia yet known, it seems the most extraordinary in its conformation, exhibiting the perfect resemblance to the beak of a duck engrafted on the head of a quadruped."

Habits of the Platypus.

Unfortunately for naturalists, the native black of Australia is a being of very low intelligence, even inferior to the lowest African. Hence, excepting the kangaroo, and those creatures which as game form largely the subsistence of the native, and exercise his best skill in their pursuit and capture, his knowledge of the habits of the native animals is surprisingly meager. But though his woodcraft is limited, he will tell tall stories in the hope of remuneration, — a kind of mendacity not considered immoral among savages. Still, as a guide to the haunts of the platypus, the shrewdness and docility of the native make his services invaluable. What we really know of this little beast has been almost entirely obtained by the whites; and the most trustworthy information has been procured by the specially directed efforts of interested naturalists.

As this curious creature is a burrower, and leads a

semi-aquatic life, it is well called the Water-mole. For its home it selects the bank of a river away from the sea. In this bank, on its steep side, and usually a little below the water-mark of the pond or stream, it begins its burrow. The passage made is rather irregular, with a sloping ascent, until perhaps a distance of twenty-five feet is reached, when a chamber is excavated. This is really the living-room, and is fixed at a point above the reach of any freshet or unusual rise of the stream. This nesting-place is about two feet below the surface of the ground. It must have an opening for the air, and for communication on the land. So another burrow is constructed, connecting this part with an outlet above, which opening may be fifteen or twenty-five feet distant from the chamber.

In tunneling the animal works very hard, as it has stones or roots or both to encounter, which must be removed, or the tunnel worked round the obstacle. It is said that two feet will be tunneled in ten minutes. At intervals is a small expansion on one side of the burrow. It is thought that these denote stages of the work of burrowing, and serve for resting-stages to the tired worker. It seems to me these places are intended for a permanent use, as turn-outs, like what we observe in narrow country roads. Suppose a platypus going out and another one coming in, they could not pass each other unless one occupied a cavity, and so let the other proceed. For precaution the entrance below the water is but about five inches wide, some say less. At any rate, it is but sufficient to let the animal squeeze through.

Respecting the living chamber, trustworthy descriptions of its size do not agree with the pictures in the books. It surely must be a pretty crowded domicile for the father and mother Platypus, when their two youngsters are grown up. As to that air-hole, or outlet on the land, it is often betrayed by the runways made when they are out at night.

Hardly anything is known of their land habits. Their clumsiness forbids any conjecture of much play. Doubtless food is the object, and it is not improbable that these night ventures have to do with a special quest for caterpillars and earth-worms, beetles, and snails. Though on the land the Duck-bill is anything else than nimble or graceful, in the water it shows to advantage, its agility and speed being surprising, for it can almost vie with a fish.

Adapted to an aquatic life, the fur of Platypus has some interesting peculiarities. "Two kinds of hair are noticeable in the pelt, one extremely fine and close-set, forming the dense under fur; and this is protected from the water and the soil by an outer coating of coarse flat hairs." I remember how interested I was when this peculiar feature first came under my notice. Even if I should strain a figure, let me try to make this matter of the two kinds of fur plain.

You can easily understand the hair of an otter, short and fine, close-set, and the points directed towards the tail. So conceive the fine fur of Platypus. Now imagine as mixed in this short hair a much longer kind, each hair of which having the shape of an

oar, but each oar bent at the neck, that is, deflected at an angle, and the flat blade of every one of these tiny oars lying upon the soft fine fur, shedding off water or soil. Each one of these long hairs in the fur on the body, — for there are none of these on the tail, — is in the shape of a tiny oar, crooked or elbowed at the neck or shank.

A freshly shot water-mole usually shows in its cheek-pouches the presence of "fresh-water shrimps, water-fleas, and beetles." The animal gets its food chiefly in the bed of the stream, and is able to stay under the water as much as five or six minutes, so it is stated. This faculty is in keeping with a semi-reptilian nature, for it certainly seems a long time for an air-breathing mammal. In diving the head is brought under the chest with a quick jerk, the front paws paddle rapidly, and "the tail moves from side to side as a rudder." They root in the sand or mud, and turn over the small stones at the bottom with their powerful bills. Whatever is caught is stored in the cheek-pouches. "They then rise to the surface, and before swallowing their food triturate it with a slight lateral movement of the jaws."

Mr. A. B. Crowther kept a young one alive three months, which ate minced fish, but devoured earth-worms greedily. This would indicate that such forms a favorite part of their food; hence our conjecture that these are sought on land in the warm nights, when the worms come to the surface. For this work, as well as for getting their food at the bottom of a river or pond, the equipment of the strong bill is

admirable. The naked skin covering both jaws is very sensitive, and projects all around the mouth like a "flexible lip," or border, while at the base of the bill it expands into a frill. When its owner is burrowing for worms, or any food, it turns this frill backwards "so as to protect the eyes, and prevent the soiling of the fur."

Hunting the Platypus.

Arthur Nicols, an English naturalist, went to some trouble to solve the history of this provokingly shy little beast. Though, as I have hinted, not much on woodcraft, where the habits of animals are concerned, the black Australian is of excellent service. The hunter must camp out at night, when his guide is invaluable. "In the intervals of profound sleep he is roused like a wild animal by the slightest noise. I have passed many nights in native camps, but I never heard the heavy breathing which characterizes the larger-brained European. These children of the forest, so long as they are unsophisticated by rum and gin, are to be seen in all the integrity of savage life; and they remind me forcibly of animals in their noiseless, cautious movements when awake, and the lightness of their sleep."

So Mr. Nicols secures for his guide a "genuine Culgoa River aborigine"; and with a determination to see the animal in its haunts, sets out for a place on the Culgoa River, reputed to be a favorite resort of the platypus. After a journey of miles through a

region that had not yet heard the woodman's ax, the place was reached. A fine patch of high ferns fringed the bank like a meadow. They moved slowly and cautiously along, when a keen-eyed heron gave a scream. This would never do! for taking the alarm, no water-mole would show itself. So they both stood stock-still, until all was quiet again. Then for two hundred yards they crept on their faces toward the water's brink.

They were now in a dense thicket of ferns by the river. Still the hunter's white face might be discerned, whereas that of the black could be taken for any dark object. So the white man made a little sheaf of ferns, which he stuck on his head, thus covering his face. Then he lay upon his chest, looking between the fronds at the water, his gun held in position.

The scientist was nearly ravished with the scene before him, and became seized with the emotions of a poet. The sun was near to setting, and his yellow light gilded the bosom of the stream, partly covered with the grand Nelumbium, each leaf more than a foot across, and rising over them in mimicry of pearly bosses upon emerald shields shone the elegant pink lotus-like flowers. The dense entangling scrub behind them was spangled with the gay exuberance of acacias, and other floral beauties, and the hot air laden with their perfumes.

To the hunter, watchfulness, patience, and silence are golden virtues. Here was danger of a somnific influence upon the naturalist. There was none of this imagination in his simple guide. He meant business. Says

the master: "His steady gaze remained fixed upon the bright face of the slow moving river, watching, with all the patience of his race, for the first movement on that placid sheet of water which should tell him that a platypus had come out of its burrow to play with its fellows in the twilight."

Despite the enchantment of the scene, the hunter's position, lying on his chest, with uplifted head, and the strain of the gun, were becoming irksome, when the black guide, without turning his face or speaking a word, touched him. That touch meant, — "See!"

There was a circular ripple near the Nelumbium leaves, and in another moment a platypus was crawling across them in full view, but too far away for a certain shot. He remained for a few seconds, now upon the leaves, now diving in and out among them, with the ease and rapidity of an otter. Then it suddenly disappeared. Breathless with anticipation I scanned the water in every direction, but for some time not a ripple disturbed it.

"This, however, was not to last long. Close under the bank, within ten yards of our position, he, or rather they, — for there were two now, — rose to the surface, and began playing together, and performing graceful evolutions, by rolling over and over each other, showing every part of the body in turn, and sometimes almost leaping out of the water with an agility in surprising contrast to their slow motions on land.

"Interesting as this was, the waning light of the sun forbade the risk of losing a shot; and the ani-

mals had gone some distance farther off. Accordingly I raised the muzzle of my gun slightly, and fired, in the hope of securing both. The black fellow dashed into the water, and brought out a fine male platypus, severely wounded, but still able to make vigorous efforts to escape; while nothing more was seen of its companion."

I have described the spurs on the hind limbs of the male Platypus, in some respects like the same in the male barnyard fowl. Opinion is so contradictory about them, that it is hard to assert their function. Each spur has a groove, and this is connected with a gland, which supplies a sort of toxic fluid; thus it seems really a formidable affair. Yet these animals when captured alive make at best but a feeble use of the weapon in defense. From the fact that a water-mole is occasionally caught, with ugly ulcers on its body, it may be that these appendages serve offensive purposes in their quarrels, or in administering discipline in the family.

But to the imagination of the aborigine the spur of the Mullungong bears a mysterious malevolence. It affects him with abject terror; hence the excitement of the native guide at seeing the impunity with which the hunter handled the resisting captive was pitiful. However, no harm came of it. The sun was now down, and as they must stay in that spot for the night, the native made a fire, while Mr. Nicols skinned his trophy. The cadaver was cooked, and some tea was brewed; and the roasted Duck-mole was pronounced good.

Before sunrise they were at their post among the ferns again. After long waiting one animal at last appeared. It was a fine female, and was shot. To the white man's eye it was lost. But the savage plunged in and swam about, and found the game where his master would never think to look. In fact, it was retrieved with a sagacity, call it reason or instinct, or both, not greatly unlike the action of a well-trained dog.

They next set about searching for the burrows of these animals. Five were found, and marks set up by which the places could be recognized, the naturalist fully intending to return with the proper force and appliances for a thorough examination of them. It proved, however, as with many another good resolution made by men when blessed with a fine opportunity, that the scientist never saw the place again.

Platypus in Captivity.

Our earliest knowledge of the young Platypus in captivity is from Dr. Bennett, who kept two little ones with their mother alive for more than a month. "During the day she would remain quiet, huddled up, with her young ones; but at night she became very restless, and eager to escape. The little ones were as frolicksome as puppies, and apparently as fond of play. Many of their actions were not a little ludicrous. During the day they seemed to prefer a dark corner for repose, and generally resorted to the spot to which they had been accustomed, although

they would change it on a sudden, apparently from mere caprice. They did not seem to like deep water, but enjoyed exceedingly a bath in shallow water, with a turf of grass placed in one corner of the pan. They seldom remained more than ten or fifteen minutes in the water at one time.

"Though apparently nocturnal, or at least preferring the cool and dusky evening to the glare and heat of noon, their movements in this respect were so irregular as to furnish no grounds for a definite conclusion. They slept much, and it frequently happened that one slept while the other was running about, and this occurred at almost all periods of the day. They climbed with readiness to the summit of a bookcase, by means of their strong cutaneous muscles and their claws, mounting with much expedition to the top. Their food consisted of bread soaked in water, chopped boiled eggs, and meat minced very fine; and they did not seem to prefer milk to water."

But a little more than a month of confinement, and all these "feeble folk" had died. Thus as pets they are of small account. However, Mr. Crowther was somewhat more successful, he having succeeded in keeping one of a family alive for three months. He says:

"They soon became very tame in captivity. In a few days the young ones appeared to recognize a call, swimming rapidly to my hand, if I paddled the water. And it is curious to see their attempts to procure a worm enclosed in the hand, which they

greedily take when offered to them. I have noticed that they appear to be able to smell whether or not a worm is contained in the closed hand, to which they swim; for they would desist from their efforts if an empty fist were offered. Although so tame, they refuse to permit any handling, especially any touching of the bill or tail; not so, however, with the side, which they appear to like to have scratched, turning over and coming back several times to have the operation repeated.

"The young ones I could safely permit to run about the room; but the old one scratched so incessantly at the wall, that I had to shut her up. Then it lay quietly throughout the day, but on the approach of night it renewed its struggles for freedom. If I startled the animals from their sleep, it invariably produced a general growling or murmuring."

As stated already, the Duck-mole and the Porcupine Anteater make up the order *Monotremata*, because of a bird-like physiology possessed by these animals. Before completing what is to be said on Platypus, a few words should be given to the allied genus, the Australian Porcupine.

The *Echidna hystrix*, or Porcupine Anteater, as its name implies, is clad above with sharp spines, though it has hair between them; and Tasmania has a species with the hair so long as to conceal the spines. The Echidna is a burrower, and is restricted to the land. It has in its skeleton a good deal in common with Platypus, but in external aspect it differs greatly from the Water-mole. The bill is long, narrow, and tooth-

less, and the tongue of great length, and extensile, and covered with a sticky slime by which it captures the ants. It is also unlike the Duck-mole, in not having any pouches in the cheeks, to carry food.

But like the Duck-mole, the male Echidna also has those singular spurs on its hind feet. Very curiously, from this feature it got its strange scientific name. Believing these spurs to have the power of inflicting a poisonous wound, Cuvier gave it the generic name *Echidna*, which is a Greek word meaning a viper, while because of its spines he gave it the specific name *hystrix*, meaning a porcupine.

Says Dr. Shaw, when writing of this little beast in 1792: "It is also a most striking instance of that beautiful gradation so frequently seen in Nature, by which creatures of one tribe or genus approach to others of a very different one." Leaving out the technical names, he adds: "It forms a connecting link between the very distant genera of the porcupine and the anteater, having the external aspect of the one, with the mouth, and peculiar generic characters of the other."

My readers can see, from what we have learned of the inner structure of the Echidna, that it is not in accord with present knowledge to call it a connecting link as above. In any natural arrangement this animal must rank far below the true porcupine, which is a rodent, and even below the true anteater. But we are approaching a strange story of both Platypus and Echidna.

CHAPTER XII.

MAMMALS THAT LAY EGGS.

THIS seems a contradiction of terms, since the very meaning of the word mammal is an animal that suckles its young. For this reason have I avoided the common word quadruped, which simply means four-footed. The greatest author on natural history among the ancients was Aristotle the Stagirite, who wrote in the fourth century B. C. His third division of living things was the "four-footed egg-laying animals," meaning by these the frogs, lizards, and turtles, or what we should call the Amphibia and Reptilia, which being four-footed are really quadrupeds.

In respect to the Duck-mole, it was the prevailing conception among the Australian settlers that the animal was a sort of four-legged bird. And in scientific circles it was long ago considered proven that the creature laid eggs. However, this did not hold its ground long, it being on sober second thought regarded impossible for a mammal to act so like a bird. As the case is very interesting, let me tell the story in the fewest words possible.

It is about sixty years since the first curious eggs were sent to England from Australia, said to have been laid by the Duck-bill Mole. Some of these were sent to Paris, and were made the object of study by the famous Geffroy Saint-Hilaire, who in 1829 communicated a memoir on the subject to the Royal Academy of Sciences in Paris. Happily his description of the eggs was accompanied with a drawing, which was engraved, and his words are very clear: "The eggs are remarkable for having a regular oblong spheroidal form. The ends are of equal width, the length in English $1\frac{3}{8}$ inches and the thickness $\frac{6}{8}$ of an inch. The shell is thin, brittle, slightly transparent, and of a dull white color."

Many a bright country boy or girl can recognize in the above a description suitable to the eggs of several species of our native turtles; for instance, the pretty "Painted Turtle," with its mingled lines of yellow and red, known to science as *Chrysemys picta*, and found almost everywhere east of the Mississippi; and the handsomer "Painted Turtle" of the Southern States, *Trachemys elegans*, with its gay garniture of brilliant red, like inlaid coral.

One would suppose that the communication to the Academy should have settled the question. Yet for all this the matter seems to have been ignored, and at last to have been completely forgotten.

Interest in the subject was revived in 1883. For many years the scientists of the Old World upbraided those of the New for not solving the history of the King-crab, so plentiful on our shores. It became in

like manner among us the general sense that English scientists ought to unravel the mystery of Platypus, a common animal in one of their own colonies. This was felt by the savants of Great Britain to be in no way complimentary to them, and so a student named W. H. Caldwell, thoroughly trained in the modern methods of biology, and a young man of marked promise, was despatched to Australia to devote himself to this problem.

That distinguished body of scientific men, known as the British Association for the Advancement of Science, met at Montreal, Canada, in August, 1884. While there assembled the savants of the zoölogical section of the Association were almost startled by a cable despatch from Australia. It read: "*Caldwell finds monotremes oviparous; ovum meroblastic!*" This was indeed interesting intelligence. It settled the problem,—though a mammal, Platypus laid eggs as does a bird.

In that message were two words of special import. The word *oviparous*, meaning "egg-laying," indicated the bird habit of Platypus. But the profoundest word in the despatch was the curious term *meroblastic*. This unusual word must be explained.

Whether it be a plant just starting in the seed, or an animal just beginning in the egg, the earliest effort of the life-force always is to make cells with which to build the structure intended. If I cut a quantity of clay up into large segments, each of these can be cut through, and these in turn cut through again, and so on, as often as I choose; and in the process, while

the segments were getting smaller, the material would assume a different consistency. So with the life-stuff in the egg, — it begins by dividing into segments, these again are divided, and again and again, until the cell of normal size is reached; and then the forming of the embryo begins.

This process of dividing the protoplasm, or life-stuff in the egg, — this cell-making, is called segmentation. There are two well-recognized differences as to the extent of this action in eggs representing different classes of animals. Let us take an egg of a frog or a toad, which represents the class Amphibia. We find these eggs at the edges of still water, in a jelly-like substance. The toad eggs are in jelly ropes, and the frog eggs in lumps or masses of jelly. The study of one of these eggs under the microscope reveals the fact, that at the start of incubation its entire substance is divided up into cells, — that is, it is wholly segmented. The embryologist calls such eggs *holoblastic*, meaning that their segmentation is complete.

The next higher class to the Amphibia is the Reptilia. Here we meet such creatures as snakes, lizards, and turtles. When hatching, the life-stuff in their eggs separates into two distinct portions. The life-force works only in one of these parts, — hence only one part of the egg is segmented, or made into cells; — and it is in this section that the living structure is built up. What about the other part of the egg? Why is not that segmented? This is the food supply, and as such is slowly absorbed, or taken into the part which is being organized into a living form. Thus the

contents of the egg consists of two masses, one of which is segmented or cut up into cells. This is the formative part. The other does not segment, and is the nutritive part. Such an egg is said to be *meroblastic*, that is, partially segmentive.

But is it not worth our while to master these two unusual words, holoblastic and meroblastic? They are both made from the Greek. Take the first one: its first half is from a word meaning "whole" or "entire," and the second half is from another word meaning a "bud" or "beginning," because the cell is the beginning of a living form. Hence this technical word signifies "all-cell," that is, "entirely segmented." As to the word meroblast; *mero* is from a Greek word meaning "partial" or "in part," hence the sense "partially segmented."

When discussing the skeleton of Platypus, we observed in the bony structure some resemblances to both the birds and the reptiles. We now see that this animal has the bird-like habit of laying eggs, and that the eggs in all respects resemble those of the birds and reptiles in their segmentation, or first steps in development.

I think we have learned by this time that the pedigree of animals fixes their proper place in classification. Platypus, representing the monotremes, has its ancestry in some reptilian-like animal, which seems proven by the nature of its eggs. It is interesting to know that Professor Cope has discovered fossil remains of a strange reptilian, or mixed form, in the Permian rocks, which is an ancient geologic age. It would

tire you to read in detail the peculiarities of these fossil bones; but the remarkable thing is they have some features of bony structure very like Platypus; and this savant even thinks he detects the singular spur on the hind limb. Thus it may be that the Duck-bill's great-great,—yes very great ancestor, is among those strange creatures; and its eggs of so strict a reptilian development surely gives color to this supposition.

It is a curious fact of the embryo Platypus, that on the end of the upper bill is a hard scale, like that on the bill of the chick, just hatched, and on some of the embryo reptiles. Its use is in cutting round the inside of the shell, when the time arrives for "coming out" into bird or reptile society. Then of course it drops the scale as being too much of a baby badge.

As to how the hatching of the Platypus is done, and how long it takes, nothing is positively known. We must, however, suppose that the animal sits upon the eggs much in the way of a bird.

And now comes a discovery which adds another paradoxical feature to the animal. A recent examination of a Platypus embryo reveals the fact that it has ten true teeth of bone and dentine,—three on each side of the upper jaw and two on each side of the lower one; and the faces of the upper teeth have cusps, or projections, which correspond to certain depressions on the faces of the lower teeth, just as you may notice in the molars of swine. Very soon the tiny thing sheds these

true mammalian bony teeth, and takes into its duck-shaped beak that which marks its permanent, or adult state, namely, the horny ridges which characterize the bills of the birds. It is also curious that at this stage of the little one's life the soft, fine fur is missing, and the only hairs it has are the long coarse ones, which I have likened to little oars.

It was a very interesting coincidence, that in the same month when this matter of the Duck-bill Mole was settled, the discovery was made by Dr. William Haacke, director of the South Australian Museum at Adelaide, that the Echidna, the allied genus, also produced eggs. True, the two animals are of unequal size, Platypus being, as before stated, eighteen inches in length, while Echidna is but twelve. The disparity in the size of the eggs is, however, much greater, for while those of Platypus are more than an inch and a half long, according to Saint-Hilaire's figure, the Echidna's egg, according to Dr. Haacke, is not quite half this length. Compared with birds' eggs, the one is as long as that of a crow and the other as that of a sparrow.

The Duck-bill, as shown already, prepares a nest, not very elaborate to be sure, yet quite as much so as do some birds. But the Porcupine Anteater, it would seem, makes no nest, the incubation of the eggs being arranged for in an ingenious and novel way. Though the upper part of the body is covered with spines, the lower part is clad in warm fur. Here are two plaits or little infoldings of the skin or pelt, and in each, as in a tiny pocket, is carried one of the eggs.

The eggs of the Platypus, as with the Echidna, seem limited to two at a time. In their underground home these interesting creatures live, the father and mother, and the two little ones. Just from the egg, each is a smooth, almost shapeless thing, with full need of the warm, nice nest of dried grass and leaves. Thus housed in darkness, and even avoiding the day, though first made known to Europeans in 1769, this little thing has kept its own secrets against the inquisitiveness of the curious, and the inquisition of science, for over a hundred years. It is a sleeper by day, and its best activities are before and after the glare of the sunlight. Though its eyes are small and very bright, yet its home is in absolute darkness. Light in such a place is of no avail; but with this strange little being, I have no doubt that the sense of touch is all sufficient for its enjoyment. That large, curious flesh-covered bill is supplied along its edge with a wealth of nerves, of exquisite sensitiveness. What more is needed for the parents to toy with their little ones? And as to these little things themselves, this very faculty is the light of home to them: their beaks are soft, flexible, and highly sensitive; and, puppy-like, they are full of this fumbling fun.

Ere the sun is up the old ones are off to the water for a frolic of their own, and then a food-hunt in the bed of the river. With the advance of the sun in the sky they are home again, the little ones fed, may be, from some of the store in the face-pouches. This done, the old ones make their toilet, and that of their babies, dressing the fur like a cat, combing it with

their five-clawed feet, and smoothing down or preening, bird-like, with the soft sensitive beak. But as it is now their bed-time, each rolls itself almost into a ball, curling up much as does a dog, bringing the warm, furry flat tail on the back. So their home with its bed or nest of dry grass, though dark and cramped, is cosy and warm. Thus they cuddle together in comfort and security. Their feeding-time, when they both fish and frolic, is chiefly in the twilight of the morning and the evening. A part of the night is given to their movements on the land. This choice of times for absence from home comports with the shyness and general timidity of the creature.

After all is said, there is not much material for a biography of Platypus. As for the stories of the natives, they can rarely be accepted. A surgeon in the Royal Navy communicated to a learned society a statement he had received from the chief of one of the tribes in Australia, which contained scarcely a word of truth, and yet the gravity of the narrator covered up his mendacity. He declared it was a fact well known to their tribe that the Mullungong laid two eggs, about the size, shape, and color of those of a hen, and that the female sits a long time on her eggs, in a nest which is always found among the reeds on the surface of the water. The boldness and impossibility of the chief's story evoked the witty irony of Saint-Hilaire, that the statement "lacked nothing either for information or truthfulness," — a quaint way of saying that the story of the chief was not worth listening to.

CHAPTER XIII.

MARSUPIALIA.

The Cradle-bearers, or Kangaroos.

IN a former chapter allusion was made to an old mansion containing relics which seemed to mark their owners as descendants from an ancient stock. There was the usual pride of distinguished ancestry. But Nature is no respecter of persons. We are referred far back to our progenitors, who used stone implements from sheer ignorance of iron. The best things come of progress, and this takes time: and herein one dictum prevails, — the first shall be last and the last shall be first. The earliest mammals were very lowly folk, though they occupied the very best places of the earth long before their betters saw the light.

There was a time in the long ago — so long, in truth, as to preclude conjecture — when the earth bloomed as a garden, even high up into what is now known as the Arctic region. The Marsupials, or pouch-bearing animals, were the only mammals existing then. In the course of time great changes came about on the face of the earth, and higher animals of a carnivorous

nature appeared; when slowly but surely the marsupials gave way before them. They almost wholly disappeared. America had a large representation; but all have gone, except her opposums. Australia got so isolated as to be left out, so to speak. Thus her fauna and flora were not greatly disturbed. When in 1770 Captain Cook, the navigator, with his botanist Sir Joseph Banks stepped ashore, so astonished was the latter at the richness and novelty of the vegetation, that the name Botany Bay was given to the place of landing. Though he did not know it, the great seaman had alighted on a separated piece of a former surface of this world, — a relic-land, a fossil continent, its occupants being the ancient forms of life which had become extinct elsewhere on the earth.

Every one knows that in some places the wild berries constitute at their short season the harvest of our poor, as quantities are then picked for market. I once saw a poor woman thus engaged, and the sight distressed me. She carried an infant under her left arm, a basket in her left hand, and stooping low to the whortleberries picked them with her right hand. This was hard toil! I thought how much better would this thing be managed by a woman in a nomadic tribe of Indians. With nice art and tender care she makes a long pouch, open at the top, to be carried on her back. This is the baby-basket, into which feet first the child is slipped; and in this portable cradle, with comfort to her babe and relief to herself, the Indian mother keeps up in her journey with the tribe.

In Australia, for lack of food, the larger animals are forced to a nomadic life. At times a journey of a hundred miles must be made to find new feeding-grounds. When the moving-time comes, what about the tender young? How shall they be carried in such a trying journey? The service has likeness to that of the Indian mother, for the mother kangaroo has a cradle in which her little one is carried. But let us hear what that distinguished man, Dr. Owen, says:

"I have always connected with the long droughts in Australia the singular peculiarity of organization which prevails among the quadrupeds of that land. All these creatures are marsupial. I may be asked, what do you mean by marsupial? I mean that they are creatures having the power of carrying their delicate young about with them wherever they go. They have this convenience, namely, a soft, warm, well-lined portable pocket."

Then the doctor supposes the contrary condition: "Take the case of one of *our* wild quadrupeds, — suppose a fox or wild-cat: they make a nest for their litter. Suppose it should happen that they must travel one or two hundred miles to get a drink of water, impelled by the peculiar thirsty condition of a nursing mother, but obliged to leave the little family at home. Where would that family be when the parent returned from its hundred-mile journey? The poor, blind, deserted little things! Why, starved to death! In order that quadrupeds should be fitted to exist in a great continent like Australia, where these periodic dearths are such as to produce the dilemma

I have instanced, they must possess an organization suited to meet such peculiar climatical conditions. And so it is; that form of mammalian quadruped in this great continent, native to it, and born so as to make these migrations to obtain that necessity of life, water, has the superadded pouch, enabling them to carry their young ones wherever they go."

It is the need of pasture as well as water which compels the kangaroos in a time of drought to perform these extraordinary journeys. And their long hind limbs make these great journeys possible. But the other marsupials are not under such a necessity; nor would it be achievable to them. Their limbs are not adapted. Some are no larger than a squirrel, and nearly all live in the jungles and the forest. To those the heavy dew of the night is sufficient to quench thirst, as it drenches vegetation. And even the kangaroo in settled regions, where agriculture is practiced, will not migrate, but will steal from the sheep at night the cultivated grass. Hence a government bounty encourages their destruction in the settlements.

Dr. Owen follows the beautiful passage we have quoted with the remark, that these pouched animals have lived in Australia a long time. It would seem almost correct to say, they have always lived there,—certainly since the inexpressibly long ago; for it is an interesting fact, that bones of extinct marsupials have been dug up there, even of species larger in size and more strange in form than any living to-day. A skull of a marsupial was thus obtained which meas-

ured a full yard in length! Compared with such an animal the common kangaroo, the largest living marsupial, is but a pygmy beast.

The Large Kangaroo.

This term is applied to the common kangaroo, the one best known for its size and wide distribution in Australia. The word kangaroo must be taken as a family name, for it embraces quite a number of genera. Though all have a family likeness, yet there are many differences agreeing with differences of habit. The Great kangaroos love the "opens" or grass-lands, the Wallabies the "brush" or jungles. Then there are the Rock-kangaroos and the Hare-kangaroos. This last is somewhat like in size and aspect the animal it is named after. Its arms are very small, but its hind limbs are very long and slim. It is even said to be the fleetest of the tribe, being able to leap over a palisade ten feet high. The list could be extended until we reached the Rat-kangaroos. This last species will weigh from two pounds and upwards, while the Great-kangaroo is set down as reaching two hundred pounds.

The systematic name of the Large-kangaroo is *Macropus major*, meaning literally the "Greater Bigfoot"; or, more freely rendered, as the whole tribe is large-footed, the "Biggest Bigfoot" of them all. I have mentioned that of the kangaroos this large species, is the best known, as but for that the *Macropus laniger*, the Woolly or Red-kangaroo, might dispute

the palm for size. If the question among these "Big-feet" should be as to "the noblest Roman of them all," the dispute might be complicated, as it is written: "There are already known upwards of eighty species." Even could these be regarded as only varieties, the number is great; for the kangaroos make but one family of the marsupials.

The fore-legs, or arms, of the Kangaroo are short and very strong, but the hind limbs are of great length; and set to a degree exceeding that in other long-limbed animals, the hind limbs of *Macropus* are endowed with prodigious strength. Those who have hunted this animal make conflicting statements as to its weight. It may be safely averred that one weighing two hundred pounds would be extraordinary, and that one hundred and thirty pounds would indicate a large animal.

Now let us imagine such a one at its best speed bounding through the air in an almost horizontal course, a little undulating, hence bird-like, for the movement is composed of gentle curves resulting from leaps sometimes exceeding twenty feet in length, even surmounting high obstacles in the way. And this fleetness, exceeding that of the race-horse, is attained solely by the use of the two hind limbs, — the strong, heavy tail not touching the ground, hence adding nothing to the projectile force, its only possible action being that of balancer. Every leap produces, at the descent upon the ground, a tremendous thud, — thus a "mob" in motion, as the settlers would say, meaning a number together, would make a union of sounds not unlike that from a corps of muffled drums.

Every leap is at the outlay of a strain on the hind limbs much greater than is exercised by any running animal, for the Kangaroo cannot run. In the structure of these wonderful hind limbs are three notable factors, which make possible these tremendous leaps of so heavy a body.

First, the heel-bone is remarkably long. This affords a great lever to the foot; it also gives a large spread of surface for the attachment of the rope which pulls or springs this lever to the foot. Secondly, this rope or tendon, which corresponds to the *tendon Achilles* in the human foot, is thick and cable-like. And, thirdly, the leg-bones are not spongy, or coarsely cellular, but dense like ivory,—hence are actually small for the work to be done.

The above considerations relate to the strength of the hind-limbs for leaping. As to the spot of resistance, or rather the resting of the toes when the spring is made, there is a great difference between the claws of the fore-feet and those of the hind. The former have five well-developed nails. Not so the hinder. The casual observer would declare that there are only three on each foot. The truth is, that the two inside claws are nearly concealed under the skin. Now when a leap is made there is an outward push of the feet; this throws the weight or resistance mainly on the two outer toes of each foot, and these toes have an enormous development.

These creatures seem devoid of any vocal utterance, though they do much in the way of signalling by

the thud produced by stamping on the ground. Brought to bay, however, they will show fight. The large heavy tail will sometimes send the dog rolling over, and the middle toe of the three described above is very long and sharp. If the animal can get his back to a tree, when the dog springs at him, he has been known, sitting on his haunches, to catch his tormentor with his strong arms, and, holding him with the hands, to tear the poor beast open with one of the long hinder nails. Sometimes the creature, when the opportunity is afforded, will betake itself to the water. Woe to the dog if it has the temerity to attack it then! for sitting or standing on its hind limbs, as the depth of the water may determine, it will catch its pursuer with its hands, and hold it under, thus drowning it, unless the hunter is up in time, when a shot terminates the contest in favor of the dog.

A learned writer says the tail of the Kangaroo is not employed in changing its course. I prefer to take the statement of Mr. Nicols, the naturalist, who had large knowledge of the animal as a hunter. When leaping the hands are kept close to the chest, and the hinder toes only touch the ground. But when pursued, before long the first speed, which is so much greater than that of the dogs, becomes spent. The dogs, excelling in the quality of endurance, will come up with their prey. The middle-aged are the fleetest. It is when the dogs are near that an adult Kangaroo will display a little strategy, for, like a hare, he will double on the run. This, says a

distinguished author, is done with a few short leaps, the tail taking no part in it. But our naturalist hunter asserts that the tail, which is long and heavy, being swung to one side, acts like a rudder, and gives the animal great advantage for a short, rapid turn, which without this element of quickness would not seriously confuse his pursuers.

The tail, however, is made serviceable when the animal is on the look-out, or on the watch. Mr. Nicols describes what he calls a ludicrous scene. When hunting he saw a large male in a rank meadow of ferns. It was literally standing on tip-toes and tip-tail, the three being straight and forming a stiff, firm tripod. It thus stood nearly seven feet high, surveying the situation over the tops of the ferns. The attitude is funny enough, when seen in a menagerie; but the writer says: "It is so grotesque, and so unlike anything one could expect of a kangaroo, that should a draughtsman transfer it to paper he would be thought to be laboring under the effects of a disordered imagination."

All animals show to the best advantage when practicing the functions for which they are peculiarly endowed. We saw this in the Water-mole, — on land painfully slow and laborious; in the water all activity agility, and grace. Thus each creature has its forte. In slow movements the kangaroo is uncouth to a degree, — but when under speed, its movements are like an undulating flight, and graceful as those of a bird. "All the slow movements are awkward and unattractive, as when the animal is

crawling along with its short fore-feet spread upon the ground, dragging the long hind-legs and massive tail slowly after it, or sitting up scratching its sides and back; but at full gallop with dogs in chase, over short grass, covering the ground in magnificent leaps, executed with the utmost rapidity, it presents a picture of graceful and powerful action, unsurpassed by anything in the animal world."

It is pleasant to note any good qualities in an animal with so inferior an outfit of brains. But when a flock of kangaroos is grazing, there will generally be an old buck whose accumulated experience has begotten habitual circumspection. In his patriarchal discretion he will often pause, and from his tripodal outlook take in the situation. Hearing is with them more acute than sight. In fact, from sounds which it could not comprehend the animal in captivity has been known to die! Now the vigilant old watcher has heard something, and down comes his flail-like foot, thud! thud! thud! These herds are widely scattered when grazing. The nearest takes it up, — and the next, — and, however much separated, all take it up, and repeat the signal, and every neck is craned hither and thither trying to detect the suspected quarter. Sometimes the stupidity is such that the "mob," in a panic runs into instead of away from danger.

When in migration an old buck will keep in the rear, letting the females and the young go in advance. This looks like gallantry. Though when "hotly pressed" by the dogs, and it is not migration but

flight, it is pretty much "all for one's self." Then the poor mother, for the sake of saving herself, will even violate the maternal instinct, and drop her little one. The dogs coming up will stop to worry the helpless thing, so in this way time is gained by the fleeing herd.

The kangaroo in times of drought can make, in a very short time, a journey of over a hundred miles. But these feats, be it known, come not of choice, but of the sternest necessity, the alternative being starvation. These animals have a curious arrangement of the front teeth, by which they can cut off, as with shears, the roots of the herbage they have eaten down. Hence they are terribly destructive of the grasses; and putting off the evil day, many will linger eking out a miserable subsistence, until weak and emaciated they can be followed and beaten down with a club.

Stupid as this timid creature is, probably the kangaroo is the most intelligent of all the Australian marsupials. The brain is not quite so smooth as those of Platypus and Echidna, and the animal is when young quite easily tamed, and makes an engaging pet.

But this is trending on a profoundly interesting fact. The dog and the cat as companions show us the quality and possibilities of animal intelligence in the advanced human age. What of animal mind can be evoked from a marsupial pet should be suggestive of the mental manifestations of those animal races, so low in the scale, whose creation was in the early,—that is, the long ago.

CHAPTER XIV.

MARSUPIALIA — CONTINUED.

The Wallaby and the Koala.

THE statement which closed the preceding chapter in respect to the ease with which some of these animals can be turned into entertaining pets will be better understood, if I put together some of Mr. Nicols' experiences with a tame kangaroo.

Little Wallaby Joe.

On a visit to the zoölogical gardens of Central Park I overheard some persons talking about two little animals in a small cage. Outside, in a ground-pen, was a *Macropus major*, the great kangaroo. Said one of the above: "The big fellow outside is a kangaroo, and these are the young ones." They were looking at a pair of pretty specimens of the Wallaby, which although placed in another genus is a true kangaroo, — the chief differences being that it has upper canine teeth, which the large kangaroo has not, — both, however, being alike purely herbivorous.

As a rule the genus to which an animal belongs is

fixed by its internal structure, and the species or trivial distinction is based upon the external features. So it is that the dental difference mainly takes it out of the genus to which the large kangaroo belongs. I hope it will not seem undignified, if I say, that one item in the trivial or specific rank is a dudish difference between it and the great kangaroo.

But this point needs illustration. In a very old poem occur these lines:

> "Puss on the hearth, with velvet paws,
> Sits wiping o'er her whiskered jaws."

These bristles on Pussy's face are often called whiskers, and perhaps as frequently, smellers. Functionally, they are feelers, and serve a useful purpose when she is prowling in the bushes for prey. Now the great kangaroo has these smellers on his upper lip, and on his chin. Suppose we say, he has no whiskers, but wears a mustache and a goatee. To-be-sure these decorations are very thin, like those of an aspiring youth who is toiling for a premature accomplishment.

Now, as to the little Wallaby, it only imitates the "big folks" to the extent of wearing a goatee. And here I own to a puzzle, for as these bristles are functional, and the Wallaby in its night-prowls loves the brush, I should think it had more need of those appliances than the big kangaroo, which prefers the grassy plains. But doubtless there is a reason for all this which we do not understand.

This little kangaroo, the Wallaby, is naturally gentle, and the species will even bear domestication.

Little Joey, as they called him, as an infant Wallaby began life in a pitiful way, and for a while the tender thing had a hard time. His mother was shot, and both were put into a boat. It took fourteen hours for the hunters to get home. During this time the terrified little fellow kept his place in the pouch of his lifeless mother. The hunters reached home very late in the night, when it was found that the poor thing which they supposed to be dead was still alive. Forcing the terrified little creature from its dead mother, one of the men put it tenderly in a hunting-bag, and carried it to the house. It fell into gentle hands; for the lady took the frightened little waif with her to bed.

For a few days the baby Wallaby was kept in one room; but he soon became so tame and familiar that he was allowed entire freedom, going all over the house without leaving it. He was easily weaned, and leaving his baby-pap he took kindly to natural food, such as grass and vegetables. He was now not afraid of anybody, not even of the dogs.

This latter fact led to some curious traits of animal conduct. Those dogs had hunted his mother, and doubtless had enjoyed their part in bringing about her hapless fate. But the sagacious brutes knew well enough that Joey had become a privileged character, —he was the pet of the household, and it would not do for them to hurt a hair in his pelt. Now all this was very trying to their forbearance. But besides this Joey was provoking, for he had a way of nosing around that put a serious strain on these

canine considerations. The fact was, the little fellow could not but believe that each dog had a fur-lined pocket such as his mother had. And he was determined to find it too! So he would worry in their hair with his nose, and scratch with his claws, until his persistence seemed persecution to the dogs. They would growl, and change places, but the little tease would follow them up. To the spectators Joey's antics were very funny,—but for the dogs it was taking personal liberties to a degree almost intolerable.

Getting nothing out of the dogs, Joey would make for the lady who first took pity on him. He really seemed to regard her as his mother; and when he found her, in a trice he was in her side-pocket, where, despite cotton, spools, loose change, and such things, he would nestle for hours. Should any noise be made he would pop out his little head to learn what was the matter, but seeing nothing, he would settle again into his nest and resume his nap.

So far as fear, he was wholly indifferent to the dogs, and all they ever did was to growl a note of disapprobation when he took such queer liberties with them. This did not last long, for Joey soon mended his ways and left off his baby tricks. When he could not get at his mistress, to whom he was greatly attached, he would jump into his master's lap, and dive head first into the pocket of his shooting-jacket.

Joey took heartily to the advantages of civilization. He had a soul not contented with grass, and above roots. He appreciated highly the food of the

household,—fruit, vegetables, puddings, and, strange to say, even meat; but if he could get at the sugar-bowl, then was his joy supreme!

He was an amiable little creature, not much larger than a rabbit, though when he stood up rabbit-like on his hind feet his tallness made him seem bigger than he really was. His pretty little head, and his mild eyes, but for his limbs, might have passed him for a gazelle. Though when one of the dogs, after an extra tease, showed his teeth just for a threat, and Joey tried to grin back, it somewhat changed the gazelle resemblance; the upper lip being cleft and the parts curled up, the show of teeth, though handsome, was a little formidable. However, a little tiff settled the matter, and in fact no harm ever came of these exceptional displays.

But Joey's jumping antics beat everything else. Though so small, he was a whole show in himself. When the family were sitting at a meal, Joey, with a spring from the floor, just as easy and careful as possible, would, to the amazement of a guest, light in the middle of the table,—and smash things generally? Not at all. In this ground and lofty tumbling Joey was a genius. He was an untaught saltatorial artist. He never missed his jump. He would even hop from one open place to another on the table, without upsetting glasses or dishes. Then he would stand up on his hind-legs in the middle of the board, amid the general laughter at the comical figure; then, taking all by surprise, with one neat spring over the contents of the table, would be on the

floor, and back again, until he had his fun out to his heart's content.

For squatter life Joey's antics were unobjectionable; but for "society" his performances sometimes lacked the quality of being well-timed or polite. Still genius, even though eccentric, commands admiration. His leaps were truly wonderful. They seemed so easy and effortless, and yet so precise. With none of its zig-zag aimlessness, they were as springy as those of a grasshopper.

He had the full range of the house, and when going up stairs he would hop five or six steps at a time. Whether his down-stairs experience was becoming monotonous, or he was getting to be high-minded, is a question; for one day he took a notion to attempt a more extended exploration of his home. So up-stairs he went, and in a very few bounds reached the top story. Did the outlook suggest a grand effort? He made a leap from the window. That was Joey's last act at "lofty tumbling." It cost the performer a broken neck.

Little Wallaby had furnished the household with entertainment for one round year; and this pitiful wind-up, like the premature ending of a distinguished career, produced a temporary gloom. The proper reflection was that the orphan had been allowed too much liberty, and his downfall was the outcome of an unwarranted confidence in his own abilities.

But let us not damage Joey's record,—"of the dead speak only good"; and to err is human. Even for a Wallaby, all of them simple folks, he

was gentle and innocent, and must not be written down as one

"That fell in rank-blown pride."

So, happy be the memory of little Wallaby Joey!

To discuss fully the curious mammals of Australia would fill volumes. Their number is large, and their diversity in size and form is very great. One species is hardly larger than a mouse. Some of them, too, like our flying squirrels, can glide from tree to tree. And there are among these marsupials external resemblances to almost all our higher mammals. Hence one of them, the Koala, a tailless creature, is known as the native bear, though Bruin would not own him for a distant cousin even,—and it is certain that, as to Madam Bruin, the conduct of the baby Koala would be simply unbearable.

The question of the position of the Koala in nature, and its relationship to extinct forms, though very interesting, might require too much technical detail to narrate. So I will merely mention its scientific name, *Phascolarctos cinerius*. It is a little funny that under this long generic term is couched a compromise with the popular whim or conception; for with its specific name, the literal meaning is the *ashen-colored pouch-bearing bear*.

The animal is arboreal in habit,—the tree is its home; and it is rarely seen of its own accord on the ground, where in truth it is so awkward and slow, that it is often called a sloth. By day it slumbers, and in a crotch of a tree, asleep with its

head embraced in its fore-limbs, its gray or ashy color, so like that of the bole of the gum or Eucalyptus trees, is generally a complete concealment. When night comes, among the trees its agility is all that could be desired.

In a word, it is an admirable climber, for its food is mainly composed of the leaves of the Eucalyptus tree. For this arboreous life nature has endowed it with a peculiar fitness of limbs. The creature, as said, has no tail, or none to be seen, and is about two feet long, and an adult may weigh twenty pounds. The inner toe of each hind-foot is opposable like our thumbs, while in the fore-feet the toes are divided into sets, those which correspond to the thumb and fore-finger being opposable to the other three toes. Thus each foot is prehensile, and the animal is virtually four-handed. The nails of the toes are strong, sharp, and hooked.

The naturalist hunter, whom I have cited, kept at different times a Koala as a pet. Let me try to give a sketch of these creatures, when thus treated:

Some Tame Koalas.

The hunter's favorite pet seems to have been a young Koala, which he called Ka-hoo. The name was really a part of the little fellow's plaintive cry. He was the bed-room companion of his master; and was, like many a human baby, — though very nice, very troublesome. He disliked the light, and in the evenings, when his master was reading or writing,

he would climb up to the back of his neck, and, holding on to the hair of the head as if it were a garment, would retain his place, if allowed, for an hour at a time.

When the master's bed-time came and the light was put out, then was Ka-hoo's opportunity. He loved the darkness, and at once set in for a frolic. He would seem to be everywhere, especially wherever mischief was possible. Except to a hunter, the racket raised by the little fellow would have made sleep impossible. There was a rummaging among everything, even the shooting and fishing outfit of the sportsman. Nothing kept its place that could be upset. Even the book-shelves were mounted, but the books were not noticed, nor any litter-ary work attempted, such as I have seen domestic rodents achieve. To tax his best performances, it was enough that the object should be as much out of the way as possible. Hence Ka-hoo aimed to get at any projection or fixture on the walls of the room, from which he always came to the floor with a thud!

This racket would be kept up for an hour or more, when, getting tired, the animal would betake himself to his master's bed, there snuggling under his arm; but such the creature's alertness, that the sleeper never rolled on him.

Ka-hoo disliked to be put on the floor. I have mentioned that in the wild state the species is but rarely seen on the ground, where, their movements being difficult, are slow and ungainly. If left on the floor, should a servant pass by, he would grasp her

skirt, and climbing half-way up the garment would, hang there sleeping while the servant went about her work; for, like the troublesome baby, Ka-hoo had unusual indulgence.

I am sorry to say of this engaging little fellow, that, like other aborigines, it was not the white-man's virtues, but his weaknesses, that he imitated. He even took to eating tobacco, swallowing it with enjoyment. When his master was smoking, while reading, he would climb upon him, get perched on his shoulder, and take the pipe out of his mouth, and put it into his own, — not to smoke, for he had not learned how, but to eat the stem, if allowed; and on one occasion he did get a rank pipe, and chewed up, and ate the most of the stock.

After their return home from the hunt, it seems that some indulgence was had, not unusual to such a wild life, and Koala, when he heard the clink of glasses, would come from his perch in the rafters, and beg his sip of the white-man's firewater. Of its effect my reader may rest assured that, as with the savage, so with this little beast, it was no improvement upon either health or character.

Another of Mr. Nicols' koalas took a strong liking to the mistress of the house, evincing an unmistakable affection, and even for his species showing a high degree of intelligence. The little fellow was allowed the utmost freedom of range. It being the Australian summer, the windows were left open at night. Thus the pet would go off to the brush, or forest, and betake himself to the dew-drenched trees.

There he would regale himself on the leaves, and perhaps have a little frolic with his wild friends, not having got above his poor relations. All this done, he would return to the house, and this before the night was over, entering at the open window by which he had left. But here again came in the "troublesome baby," for he would get into his mistress's bed, all wet and muddy, and snuggle up to her with a grunt of satisfaction to himself, — but evoking an expression of discomfort from the waking lady.

One evening, when the hunter naturalist was enjoying his leisure at the house, a native black came with a tiny little animal for him. It was a very little Koala taken from its mother at an age altogether too tender for such a deprivation. So young was it, that the hunter was about to knock it on the head, and so end its distress, rather than let it starve to death. But a bright idea caused a resolution to try to raise the poor thing. The house-cat had a litter of kittens, and all save one had been destroyed. The tender little Kolie was intrusted to Tabbie. Happily the cat took kindly to the little thing, and it was welcome with her kitten to the same fount of nourishment.

I must state here, that, unlike the other marsupials, whatever the reason may be, the Koala cradles her single little one but a short time. As a result the young is carried on the mother's back, it clinging to the thick coarse fur.

So whenever this tiny creature had taken its fill of milk like the kitten, it sought to get on the

back of its foster-mother. To this the old cat objected, — but little Kolie insisted. The cat was bothered. The sharp nails of her little charge inflicted pain, and she rolled over and over, without dislodging the strange thing. In her embarrassment she ran round the room, but carrying the little torment, who clung pertinaciously to her. And this was not a difficult thing for the little waif, as it was only what all baby Koalas had to do in the gum-trees, so even when the mother ran among the branches they did not get brushed off.

As long as it lasted, the experiment was really interesting, and afforded much amusement. — But Pussie's milk was greatly different from that of the mother Koala, and the little thing in a few days died.

It was not long ago when the first living Koala reached England. Its arrival caused much interest, and the animal was intrusted to Mr. Bartlett, the director of the Zoölogical Institute.

He took it to his house. Its habits were much like those of Ka-hoo. It would sleep by day and romp at night. This gentleman would shut himself up with it in his library. While the light burned the animal would be comparatively still, but the instant the light was turned off its play began. It would climb up the library case, and in fact would get on everything that it could, and keep up a general racket. It tried to mount a small stand, or piece of furniture, which went over with the little fellow, giving it an unlucky blow that puffed out the merry life of the distinguished young foreigner.

The appearance of an adult Koala is pretty, and a little quaint. There is a playful pertness in its physiognomy; its small round head being set off by its prim round ears. The full black eyes give it a gentle aspect. And the black spot on the end of the nose is funny, for all the rest of the body is a uniform ashy-gray.

Koalas seem also to possess more intelligence than the other marsupials. They have, moreover, a voice which is "plaintive and unvaried, but not unpleasant." It is a triplet of sounds, "which may be written ka-koo-oo; the first is uttered quickly, and rising in tone, the second falling an octave lower, and the third becoming a long-drawn mournful cadence. Whatever may be the state of the animal's mind, this is the only expression of it, except a suppressed grunt, which seems to indicate satisfaction."

CHAPTER XV.

COUSINS THREE OF HIGH DEGREE.

Cousin One—The Raccoon.

EUROPE in her marsupial age sank slowly into the sea. And her emergence from the depths was probably as slow. The régime of the Pouched Animals was over,—and they disappeared before the coming of a superior race of beasts. America, then, is the older world, as she is not yet quite out of her marsupial days. In fact, she has several living representatives of the times of uncouth mammals. But her one genus, *Didelphys*, the opossum, of itself marks her as an ancient land. But she is not so far back as Australia, with her Kangaroo, for the opossum is an advanced marsupial, and belongs to America alone.

The Virginia opossum of the Middle and Southern States is but one of the many species of this genus to be found in South America,—although not one opossum is to be found anywhere else in the world.

It is an interesting coincidence that in the Eastern States is the one species of Raccoon to be found in our country, the *Procyon lotor*. Going through

Mexico to South America we find several species; also the congener *Nasua*, the Coati-Mondi. So close is the relationship of these two genera, that naturalists have put them into a family under the name *Procyonidæ*, as if all might be Coonites.

And there is also in South America a curious little animal, the Kinkajou, *Cercoleptese caudivolvolus*. Out of the Americas not one of these three creatures is to be found. Moreover, as I expect to show, they all have a lineal descent from the same ancestors. Hence, I shall treat them as three cousins of a distinguished pedigree.

There is a humiliating likeness in one particular between the human and the animal races. The stronger have displaced or destroyed the weaker. Those ancient herbivores which were but feeble folks, each

> "Did forfeit with his life all those his lands,
> Which he stood seized of, to the Conqueror."

Though less savage, yet of those conquering carnivores came our Raccoon and his cousins.

The immediate lineage of our Pontos and Tabbies had not begun when the Procyonidæ, or Coonites, were a power among the beasts. The civet-like face is suggestive of litheness and cunning, while the bear-like build of the skull and feet indicate strength and endurance. And the skull has two other marked features which look more to further bequeathal than to a past inheritance.

A very un-bear-like development is the swollen ear-drum bone, like that in the dog. Besides this

are the crushing-teeth, or molars, so much like the back molars of the dog. Now just this deviation from the predominance of the bear structure, in this generalized form, the Raccoon is one of those prophecies of Creative intention which science alone can interpret.

Now comes the question, What does Procyon mean? Literally it is the "before-dog,"—not that our Coon is a dog at all,—but the precursor, the forerunner, the indicator of that race, so high in intelligence. In this generality of the fabric is the prophecy and promise of a coming specialty of structure in the carnivores, as seen in that highly organized and specialized animal, the dog, the servant and lover of man.

The fact of the high antiquity of the Raccoon's ancestry is here adduced, because it must attract the reader. And the few words on its bony structure are given that it may appear how profound are the teachings of comparative anatomy. Of these two curious creatures, here called cousins, the raccoon and the coati, I am now considering the first, and am dividing the story into topics, the better to aid our memory. The little already said must at present suffice for the Coon's pedigree.

A personal description of the Raccoon is now in order, although word pictures of living things are difficult to make. The raccoon is a really pretty animal, and has some attractive ways, hence it is often seen as a pet in country-houses. A fully grown specimen will measure two feet from the tip

of the nose to the base of the tail; and either one of these extremities would furnish of itself the topic for a little composition.

It is thought the becoming thing, in winter, for a lady to wear about her neck a round fur tippet, called in bad taste a boa, as if it might bear resemblance to the *boa constrictor*, that terrible strangler of beasts. Now, for comfort and beauty no "boa" could vie with one made of coon-tails, such the length and softness of the fur, with the pleasantly contrasted colors of the rings.

And this recalls the barbaric splendor of Powhatan, the Indian emperor, so styled by his prisoner, Captain John Smith. He says that "more than two hundred grim courtiers stood wondering at him, as if he had been a monster; till Powhatan and his train had put themselves in their greatest braveries. Before a fire, upon a seat like a bedstead, he (the Indian emperor) sat covered with a great robe made of *Rarowcun* skins, and all the tails hanging by."

Observe, in this showing off the king "in the best barbarous manner they could," how much of the grandiosity and pomp of the occasion was due to the Raccoon tails!

There is a tint which is much admired, that of the human hair when the raven locks are "just upon the turn." It is almost shown in the fur of the raccoon. The long hairs are tipped with black, the shorter and softer hairs are of a light color, and by blending of the two the entire pelage becomes a handsome grizzly gray. The fine bushy tail is

ringed with bands of light ashen-gray and shining black. And this handsome ringed brush is an ornament which distinguishes the entire tribe of the Coonites, as the Coatis have a similar adornment, with even gayer contrast of colors.

As to the forward extremity, the proboscis, the Coon bears this member also in greater moderation than its cousin. In truth, the snout of the Coon is a rather pretty and pert affair. Speaking in figure, the animal does not turn up its nose at anything, for it has an omnivorous appetite; but in sheer inquisitiveness this organ pries into everything. Yet this little whity snout has a pretty natural turn-up-a-tiveness of its own, for it is, as some one has said, "tip-tilted like the petal of a flower,"—a tulip, for example.

The Coon has a knowing face, but is innocent, that is, not foxy; for though meddlesome, and somewhat impudent, it has not the craft of Master Reynard. The face from chin to top of forehead is narrow, but in the other direction it is very wide. Around the muzzle is a band of chalky white, with a spot of purer white on the tip of the nose. On this spot, as if painted on the black face, rests a V in white. The top of each bar of this letter touches the inner corner of the bright little eye, and is continued round it, looking like ivory spectacles on a face of ebony, the expression of it all being that of grotesque gravity.

The trim well-set ears, round and erect, and not over-large for beauty, impart to the face an air of neat compactness; for though the ears are not large, the ear-drum is, so the hearing of the animal is acute.

The feet, especially the forward, or hands, are almost naked, and so delicate as to present a light-fingered aspect, in no way comporting with the animal's bear-like alliance; for when it sits or stands it does so in true ursine, that is flat-footed style. And yet, curiously too, when it runs it is a toe-stepper like a dog.

Owing to its thick fur, the coon is smaller in body than it looks, for it is not much larger than many a domestic cat.

Very little comes amiss to the Coon's bill of fare, a fact which makes the animal a nuisance to the farmer. "It eats almost everything. Fish, frogs, birds, and their eggs are eagerly sought, and adroitly taken. These failing, the hen-roost is visited, and for variety the gardens and the fields. It is said to open pumpkins and eat the seeds. The sweet milk in the kernels of green corn is eagerly sought; and it does much mischief in the cornfields, bending down the stalks and gnawing on the ears in a provokingly wasteful way, so unlike that of the musk-rat, which gnaws off the ear and carries it to his home. Hence the sight to the farmer on a morning of the coon's large tracks is anything but welcome."

The knowing beast will learn what planting is being done, and will undo in the night much of the farmer's work by day. An old coon not far from my home was said "to know beans." He would in one night scratch up and eat the planting of the garden.

As already stated, our Northern Raccoon is known among naturalists as *Procyon lotor*. The name *lotor* means "washer," and the animal is called by the

Germans "the washing bear." The creature has an unsightly habit of subjecting its food, before eating, to a water-bath upon almost every occasion, reminding the writer of a fastidious person whom he knew, who was so fussily cleanly that she was called dirty. She had a nose for uncleanness. The primest cut of beef was for her unfit to be eaten until it had been sodden and drenched in many waters, and made as colorless as the flesh of fish. So with the coon, especially if it have animal food; even an oyster, of which it is very fond, must be doused in water until it becomes almost shreddy.

Some say this is due to the animal's sense of cleanliness. Nonsense. Others think it is to soften its food. Does an oyster need softening? Besides, *Procyon* is well supplied with good stout teeth. Of these it has forty, only two less than the bear. And the molars have tuberculated crowns, which, though not well suited for grinding or mincing, are admirable for crushing. As to its two somewhat outstanding canines they are double-edged and sharp, cutting keenly, of which the writer has had very convincing experience. We think that the habit of washing its flesh food is due to instinct. It can catch fish, but not in the way nor with the ease of the otter, for the coon finds diving difficult.

This dousing of its flesh food in water is a curious gastronomic propensity, probably imparting to its dietary a smack of the taste of fish, of which it is so fond, but which the animal does not find it easy to obtain. It is an interesting fact, that the Raccoonda, or great water-rat in Central America, so valuable for its fur, has the same propensity of washing its food.

Coon-Craftiness.

For an instance of coon-craft, a teacher of zoölogy informed his class that the raccoon would lie in wait by an oyster-bed, and when the oyster opened its shell would insert a paw and snatch the mollusk out. Another gentleman of education with all gravity told me the following:—

"In the south are many oysters, long and narrow, which they call raccoon oysters, because coons eat them. In Florida, I have often seen on a moonlight night, the raccoon come out of the woods and steal softly to the oyster flats at low tide, and the oysters at his approach would all shut up. But the raccoon would wait quietly until the oysters would open; then, snatching his paw between the shells, the coon would jerk the oyster out. But if not quick enough sometimes the oyster would close upon the paw, and the coon would have to carry the oyster, being unable to shake it off for some time."

Some of this statement is true as having been seen, but the remainder is born of the imagination.

The raccoon does like oysters and the muskrat likes river mussels, and, however it is done, each animal has his own way of securing its food. I never heard that the muskrat opened an oyster, though it is certain that he does in some way get the unio, or river mussel, out of its shell, and his sharp rodent teeth one might think had a good deal to do with it. The coon has not this outfit, and it may be that when he gets an oyster he does so by manual dexterity, but not altogether as described above.

The so-called coon oysters are also known as strap oysters. They grow standing on the pointed or hinge-end, owing to their crowded condition, which compels them to grow upward, and thus they become long and narrow. Those of them on the flats will become exposed at low tide, and at this time it may be that the coon finds an occasional one feebler than the others and with his hands may be able to force the valves apart, and thus secure the contents.

An intelligent youth near to manhood asserts that he has often seen the muskrat bring the mussels to shore, and open the small or weak ones; and leave the large ones to the sun's heat, when they would soon die and so open of themselves.

If this be so, it is supposable that the raccoon might bring oysters up from the flats, and thus expose them to the sun. But this would accredit the animal with a good deal of wisdom and patience.

The raccoon makes much use of his pointed, flexible muzzle in extracting worms and grubs out of nooks and narrow places. Where this fails the cunning fellow turns his paws to good account. He will vary his efforts, if necessary, putting his body into position and introducing the paw sidewise. Thus he will explore the nest of the golden-winged woodpecker in its deeply excavated hole in the apple-tree, inserting his paw and getting out eggs, and sometimes drawing up the poor bird itself.

That the raccoon has a skill of his own cannot be doubted. A friend informs me he was hunting in the Adirondacks, and the party encamped for the night. The camp was the ordinary shed or booth with an open

front, which was well protected by a fire. In the night a raccoon managed to remove a portion of the bark roof and make off with a piece of bacon without disturbing the sleeping hunters, who did not discover their loss before morning.

That the reader may know something of the inner life of this fine animal we must give an account of a tame raccoon known in our neighborhood as "Coon Dick." As nearly as can be the story shall be given in the owner's words:—

"When I was a boy, on one occasion my father sent me to turn hay in the meadow. I was going to my work carrying the hay fork in my hand, when on nearing the swamp I heard a curious noise, and on looking, saw a young coon running along the bank of the stream. He would run in one direction and then turn and run back again, repeating the movement, and all the time keeping up a whimpering cry, which is not easy to describe, but which seemed to indicate that he wanted something.

"I thought that he wanted to cross the brook. With the pitchfork in my hand I gave him a toss which caused him to fall off the bank into the stream. I was tempted to spear him, but taking pity on the poor thing I helped him out of the water. To my surprise instead of running away he came directly to me. So I took him up into my arms; and scratching his head and talking to him in a fondling way, I carried him home.

"He became at once a great pet, for he seemed to have an implicit confidence in me, and I own to having had quite an affection for him. Still this very confidence

made him a little too fearless, and he would get in the way. I chained him up. But this loss of liberty was a new and painful experience. He began sulking, and for several days almost entirely refused food.

"During this time he had a curious habit of bending his head under the chest and between the forelegs, bringing the weight of the forward part of the body upon his forehead, which rested on the ground. He seemed to sit upon his face. I would stir him up, and talk softly to him. 'Come, Dick, poor Dick!' Then I offered him food, which he refused. I then as if neglecting it thought best to wait patiently. The little prisoner still refused food for nearly three days. He was now keenly hungry, and I offered him food, which he took eagerly. The matter was now accomplished.

"Dick had found his appetite, and in some degree had become reconciled to his chain. He knew me well, crying after me every time I came in sight. I would call, Dick, for he had learned his name, and he would answer me in a plaintive but affectionate tone.

"I treated him in the matter of the chain much as one does a dog, occasionally giving him full freedom. At such times he would follow me all about, and to a great distance, sometimes even going with me to the woods. He would at these times climb trees. I would then call, Dick! Dick! and make a feint of running away from him, when he would come down and run after me.

"We had near the house a pool of cold water which was fed by a never-failing spring. It was our custom to put live fish in this pool, whence we took them when wanted for the table. To our regret Dick found

this out. And he had a very foxy way of helping himself. In fact he was too fond of fish, and quite too clever at catching them. It was somewhat droll to see him waiting patiently at our little fish-pond. When a fish would come near enough, with an extended paw he would give a sideway blow with the claws protruded, and thus jerk, or hook a fish so neatly out of the water.

"When I got Dick he was, I should think, about one-third grown. He grew finely; in fact, he was well fed. But he had a mussy way of dousing his food in water.

"I caught him in June. In the fall on one occasion when he was not chained a man came to the house with his dog. Dick had scared other dogs, but this one was too much for him, and he took to the woods badly frightened. The dog left him up in a tree. I don't know but that seemed to break up his attachment for the house. He did come back a few times, but did not allow us to catch him. Soon his calls were made only at night, when he took to visiting the chicken-coop. Having now to feed himself he became a nuisance. He had become pretty big by this time, and it being late in the fall we never saw him again. It was our opinion that Dick had seen his folks, hence the wild nature was all revived."

As illustrating the cunning of the Coon, and the excitement of capturing him, let us relate an incident. Near the residence of a tenant-farmer was a large old tree which was hollow. A friend who was passing observed the nose of a coon basking in the sun, just

above the top of the hollow, and called to the tenant, "There's a coon in that tree."

"Yes, sir, and he's been there several seasons, and as I am not allowed to cut the tree down, he seems to defy me. I have set traps, and my dog has watched him, but he won't watch him any more. I think they have had a fight and he's got the worst of it. Well, I've shot him, and I know I've hit him, but it's all of no use; and the villain has several times got one of my chickens."

To this our friend said, "We'll have a hunt to-night, and I'll catch him." He was told that it would be of no use. But he returned with two men and a ladder. A ball of cotton tied up compactly was fastened to a rope. The ball was soaked in kerosene oil. A man ascended the tree and, having seated himself astride a branch, he set fire to the ball, then lowered the blazing mass down into the deep retreat of the coon.

This was a new enemy, and the disconcerted animal came with a rush to the top of the hole, and looked at the man with such a desperate gaze that he cried in fright, "He's coming for me."

"Pull up your fire-ball, quick, and stick it in his face!" shouted the leader. This the man did, dousing the blazing mass into the animal's face, which caused it to fall heavily to the ground. The beast ran for the meadow, and the dog pursued. The raccoon had to stop to fight off the dog, which gave the men time to come up, and a club settled the business.

The next day there was a meeting of a corporation

at the village a few miles distant. Mine host who was to get up the dinner on the occasion served up the coon for variety. It was said to have a wild gamy taste, but a little strong. The fact was that not one of the guests asked to have his plate replenished from that dish.

It was quite different, however, on another occasion. Our family physician had captured a coon, and, having skinned it, the carcass was given to an aged colored man. Meeting him the next day the doctor addressed the old man, "Well, Pete, how did the coon go?" "Oh, yaas, marsa; him was an excrutiating dish! I 'sure you, marsa, if der white folks would only put away de prejudise dey would find coon is most judicious eatin'. If coon was plenty it would mos' beat bacon!"

The fact must go on the record that Procyon, like his superiors, can become a sot upon opportunity. A publican in Nebraska had two tame coons, one of which being tamer than his companion was allowed wider freedom in the saloon. He soon acquired an appetite for strong drink, and even became an adept in practice at the bar; for if it was not given him he knew how to help himself. This miserable craving actually sharpened the animal's wits. He would stretch himself on his back under the tap of the beer-barrel, put his paws on the stop-cock, and manage to turn it but a little, and so let the beer trickle into his mouth, until he had got his fill.

If not caught in the act the liquid would flow on the floor, for he did not know enough to stop the tap by turning it back. Intoxication soon followed, and

the silly conduct and stagger of the drunken coon afforded a few minutes of amusement to his bipedal admirers, who knew how it was themselves. His companion never learned the trick, and so led a more commendable life. It should be added that a drunken coon does not become hilarious. Alcoholic action in these lowly brutes is after a few moments of seeming astonishment little more than a stupid muddling of the brain.

I have found in the lore of the native woodman a belief prevailing that there are two kinds of coons, the tree coons and the bank coons. The former, it is said, is the larger, and has blacker feet. There is but one species, though the difference of habit is interesting, as the one nests in hollow trees, the other in burrows made in the banks of ditches and streams.

Said a coon-hunter to me: "Once I and another man were going by the side of a deep ditch, when my dog gave tongue, and in other ways showed that a coon was near. The truth was we were standing over its nest, a hole in the side of the bank, reached under our feet. We dug downward into it and routed the animal, which we caught. The nest was fine, and was made up of leaves, moss, and pine needles, and was about six feet from the entrance. That was a knowing coon,—for no hollow tree could be so snug and warm."

In some instances these burrows have a place of egress as well as of entrance. It was a brother of the man I have just mentioned, who told me that he found two coon-burrows in one bank, and that both had a place to go in and one to come out. Said he:

"I took out of one of them two kitten coons, which cried like little babies. I thought of taking them home to bring them up, but their crying overcame me, so I put them back,—but placed them at the wrong hole. I could not make them go in, so I let them alone, and they nosed about until they found their own burrow, which they entered at once."

And I will add to the woodman's list, the "cat-coon," an eccentric outcome of the country, being a curious hybrid race, once known but never accounted for, except conjecturally. The specimen I will instance was a beautiful creature, with a finer fur than of cat or coon. She had a mincing gait, neither feline or plantigrade, a triangular coonish head, and ate with her hands. Throughout, the coon-nature was predominant. Though very gentle, even caressing when humored, she was fury itself when crossed in temper. A rash person once lifted the animal by its beautiful bushy tail, but only once, for she punished him with the ferocity of a tiger. She never retreated before a dog, but many a dog retired in dismay. Coon-like she was nocturnal in habit,—drowsy by day, and playful at night.

It is now in order to give a chapter to coon-hunting, and cooners, as those hunters are often called. As the poor things are put to their best wits to avoid or offset the wiles of the sportsman, these men are as a class possessed of much information respecting the mental manifestations of the animals they pursue.

CHAPTER XVI.

COONS, COONERS, AND COONING.

THE word *educabilia* has been used as applied to animals of a relatively higher intelligence, or such as admit of improvement by increase, which really is education. It is observable of wild animals living in the neighborhood of human settlements, that they get to be more knowing than their kith away in the wilds. The fox whose burrow is not far from the hamlet is a shrewder fellow than the one who has never heard gun or hound. Even Bob White in summer-time is a merry, social bird, coming almost to one's feet and piping forth in flute-like notes his all day-long inquiry: "Do you know Bob White?" But when the "open-time" comes, with the fall of the autumn leaves, Bob's spirit sinks within him; his light-heartedness is under a cloud,—for the fowler is around. Poor Bob! all at once he is more circumspect. He trembles at the sound of a gun, for he knows his life is in peril. He hardly dares pipe his little vespers, or give the call that gets the bevy together at bed-time. He is filled with apprehension.

And throughout the domain of animal life this is

the general experience,—exposure to man's devices brightens the animal intelligence.

It is the misfortune of the raccoon that it is betrayed too often by its own uniformity of habit as to its retreats, for it almost persistently hides in hollow trees,—as runs the negro doggerel:

"'Possum in the gum-tree,
Coonie in the hollow."

These hollows furnished by decay are generally in the deciduous trees; that is, those which shed their leaves, as opposed to the pines and other evergreens. They are mostly the oaks, maples, chestnuts, and bilstead, or gum-tree. As this last-named tree loves the swamps, and is thus sometimes accessible only with difficulty, the raccoon is safer in such a retreat; which shows the wisdom of the woodcraft in the negro melody.

Generally, it may be said, cooning is an avocation of the thriftless. However poor the larder of the charcoal-burner or chopper, be he black or white, he must keep a mangy half-starved yellow dog, known as a "cooner,"—an epithet often applied to both the owner and his beast. These coon dogs have a kind of cuteness for this sort of hunting; but the owner of a "gentlemanly dog" must regard them as curs of a decidedly low degree. There is not in them any special strain, or outcome of training. Their fitness is in an instinct of environment. On asking the owner of one of these brutes how it came by its ability at "cooning," the answer satisfied the inquiry:

"Well, I reckon Gipp is a full-blooded cur, for he

has had no training, but has come by it quite easily."

And so it is with the "cooner's" children also,—even the little toddler takes to it naturally. Hence I will narrate a few incidents occurring in the experience of some charcoal-burners:

"The Coaler's Coons."

Without mentioning time or place, except in a general way, I will state,—it was in a pine region where coaling was carried on, that is, burning charcoal, and it was at the close of May or the beginning of June. The day was fine, and the three small children of a coaler's family went into the woods. The household cur, or coon-dog, was with them. Plucking the wild-flowers, and straying without aim, the little ones got deep into the forest. The dog scented a coon's tracks near a lone old oak, a patriarchal tree overtopping the scrub, or plebeian pines. The dog set up a noisy proclamation of his discovery, and as he barked kept running around, and looking up into the tree.

And well did the little ones know what it meant. Their tiny feet were instantly set homeward, leaving the dog barking at his might. They met their father with another man going to dinner, and the three cried, almost in chorus: "O Pappy! Gipp has treed a coon! and we've left him barking up a big tree!"

There was some excitement at the chopper's hut, for the keen ears of the woodman could detect the barking of the dog. "We'll have dinner first," said the coaler to his fellow. "Gipp'll take care of that

coon; and it's my notion it's a she; and there may be a litter of young ones, so we'll take the box-trap with us." Accordingly the meal was despatched, and the two men started for the woods.

They were soon at the tree, where Gipp, true to his reputation, was still "giving tongue." A deep hollow in the old oak had an opening above. This was stopped, and a hole was cut in the bole at the bottom of the decay. Against this hole the box was set, and fire being let down at the top, the animal was driven into the trap. There was a nest, and in it a litter of three little ones, about a day old. They were plump, smooth, tiny things, hardly larger than mice, but broad for their length, and they were blind. Said one of the men: "They looked like little moles."

The mother nursed her little ones in captivity, and not until the twenty-first day did they open their eyes. The old coon became reconciled to her cage, and enjoyed the occasional presence of a puppy terrier, recently arrived; the two actually playing in a dog-like way.

The little coons very soon became engaging pets, and famous in the region. They were companions of the children, even attempting liberties with old Gipp, of whom it should be said that, though he held resentment well in check, yet he did sometimes show his teeth, and especially viewed the conduct of the pup with disgust, or as that of a cur not yet old enough to comprehend the difference between a canine and a coon, as concerns respectability.

One of the pets was sold for five dollars,—no trifle to the coaler. The two left were almost given full

freedom. As a chopper, a good deal of the man's time was spent in the woods, whither his pets often accompanied him. While he was at his work they would roam without restraint, climbing trees, and scouring among the bushes, and they would even lie in wait by the side of the little rill, and for a tid-bit snatch out a minnow. The man's work done, he would call up his pets by voice and whistle, and they would follow him home. Meanwhile the mother coon had escaped, and was seen no more.

As soon as the cold weather came, fat as porpoises, the pet coons took to the woods, and were not seen again. And this is the usual story of a tame raccoon. In its natural state this animal, the same as the bear, hibernates, although its winter sleep is not so profound or continuous as that of Bruin.

The Old Coon-Hunter.

I will now introduce an original character, and in the main he shall tell his own story.

It was a golden day in summer when I interviewed the old sportsman. His place might be called the Sportsman's Resort, himself being an adept at rod and gun. Though well up in woodcraft generally, I found him especially rich in coon-lore, as it was said of him: "He'd got cooning down to a fine point." So far from being the thriftless creature which such an accomplishment is usually taken to imply, he was a hale old man, with a clear head and a comfortable home.

Through a long life this laborious night-sport had

been his passion, in which he showed determination, energy, and skill. In this he had his admirers among the craft, for he boasted that he never lost but one coon. His house was near the water, under the shadow of some aged willows, beneath one of which we sat, I acting as an interviewer.

Being a stranger to him, he was at first a little shy of me, and his talk cautious and hesitating. But he soon fired up on his favorite theme, becoming at times almost pictorial in his vivid realism, though often indulging in certain monosyllables more forcible than polite. I will try to be true to the old man's sketchiness, even though I may have to tone down his color as a verbal expressionist.

To the question, were there any raccoons about? He answered: "There are some yet. But as the woods get cut down, the raccoon gets cut up. Forty years ago these woods of Middlesex and Monmouth were alive with coons. Now the woods are going fast, and of course game must go too. Still, when I take a night to cooning I expect to bring home something. For years back I have only been able to take Saturday night; and yet one winter, in Grant's administration, I caught sixty-four raccoons!"

"Please tell me something about the coon's family affairs."

"Well, the mother raccoon could suckle six young ones at a time, if she had them. But the most I have seen in one litter is five, and the smallest number was three. I should think four would be the average. She is very attentive to her kittens, and they keep by the

mother a good while after they are weaned, — in fact till they are nearly full grown; for we catch sometimes a mother-coon with her family of young ones, among the corn jags even at the end of November. They are pretty well-grown by that time, and certainly more than fully weaned, for generally they are littered by the close of May.

"And even the father-coon stays by them for a while at first, when they are very helpless, for they do not open their eyes till they are twenty-one days old. The he-coon stays by the one female for the one season, whether he ever goes longer with her I can't say, only that he is true to one at a time. So you see there are some good points in a raccoon's family relations."

I asked if the raccoon was provident in the matter of food. "No," said the hunter. "It is hardly necessary. Nature looks out for them in this respect. They sleep in winter, — and go into that sleep almost round with fat. The coon, woodchuck, opossum, and bear store up fat for the winter, and on this they live. You know a bear in winter sucks the soles of his feet, and in spring he is such a tender-foot, that he can hardly travel. Now the raccoon has a sucking habit too, but it's the paws he sucks, and when doing so he looks like a muff, or a ball of fur, you can't see any shape or anything of the beast, except fur. He comes out in spring as poor as a stake, for the fat is all gone."

"Then it would seem," said I, seeking to draw the old man out further, "that the coon is a do-less animal after all." To this the reply came with a snap, as if speaking for a favorite:

"Oh, no! That isn't it, sir. The coon is a good provider in its way. It has to store up fat, or it won't have it when needed. Don't you see it has to look out for a harvest by tending to the growing time. The raccoon is a strong feeder, and in the face of so many enemies it has to do a little hard work in getting supplies.

"They have their foraging grounds. You can often see a coon's tracks by the stream, or by some still water, or swamp, where they have been frogging, or fishing. They eat almost anything, and no doubt berries come in for a part of the supply. But the point is, they have their own beats, much as bears do, and they have to be very active in searching for food, if they are to get into condition."

I admitted that the hunter had made out his case, when he seemed to grow in enthusiasm, adding:

"What you call providence is well known to coon-hunters in this fact. The coon knows for miles the perfect lay of the woods. Every burrow, or hiding-place, — and especially every hollow tree. When the animal is found abroad foraging, he makes for the nearest well-known hiding-tree. Now all these points are carried in the coon's mind. Besides it has its nesting-tree, — the place for its winter sleep. And on this point there must be some agreement among them; for it sometimes happens that several will nest together. I have no doubt it is warmer to do so. But in some way they have their own trees. I suppose because it is safer, and perhaps more comfortable, one tree is known to the raccoon as the *bed-tree*, where

it stays, and sleeps in the winter, and even in summer, as being the safer, it is often the favorite retreat."

I ventured to interpose a fact illustrating the tact of a raccoon, when cut off by the dogs, but which did not occur upon a set hunt.

"A friend," I remarked, "was out with his dog. It came upon a coon which it pursued, the animal keeping along the bank of the stream. At a favorable spot it took deliberately to the creek, swimming down stream, as the dog on the bank was running up. The dog lost the scent, when the coon came out of the water."

Besides this I added the instance in which a friend told me that they came near losing two valuable dogs. The raccoon being hotly pressed took to the water, and the dogs plunged in and swam out to him. This seemed to be a part of the plan of the sagacious creature, for it handled both dogs so skillfully that if their owner had not gone to their relief they would certainly have been drowned. That coon got off unhurt; but the dogs were badly cut up.

The old hunter listened in a professional way, and replied: "Yes, I've heard of a coon's saving his bacon by that trick, though none ever got that dodge on me. But, big words all aside, I tell you a raccoon has pretty tall instincts, and some principle too! He sticks to his own kind through thick and thin, — and he is quick to help when trouble is at hand.

"When on a hunt, which is generally at night, we come up with the dogs that have treed the coon, we build a fire so that the dogs, and all of us, may see

what we are about; for even if it is moonlight it is dark enough in the thick woods and swamps. Sometimes we have to cut the tree down, but sometimes a coon will come out of the bed in the opening up in the tree. It does occasionally happen that the coon gets excited, and actually springs down from the limb; and if there was only one dog it would go hard with him, but there being more the odds are against the coon. This the spunky little fellow soon finds out; then, too, the dogs have the aid and encouragement of the hunters. At this pass the coon utters its cry of distress; and, would you believe it! every coon in that bed-tree will come at once to the relief of their comrade in trouble.

"The scene is now a lively one you may guess, and the excitement is high, which began at the first yelp which told that the dogs were at a coon-tree. They may be almost a mile away, but the night is still, and we can hear them. It is perhaps moonlight, but when we get into the woods it's dark, and a lantern stands us well. We strike sometimes a bee-line for the place, following up the sound of the dogs.

"When we arrive the dogs grow furious in their eagerness, and you'd take the barking and yelping for animals gone crazy. Maybe it's a swamp, and considerable water in it. Well, the fire is built, and the shadows of the trees have a spooky look, and the three dogs are doing their best to get the coons scared out. But they don't scare much; and if they only knew it, their safety is to stay where they are, and

keep still, for the water of the swamp gives them an advantage, as it would not be an easy job to cut the tree down in the water.

"But we have one dog whose long cooning career has taught him a trick that I never knew any other coon-dog to get the hang of. Now that we have come up, and the fire gives its light,—in a word, now that the dogs know that we are with them, they increase their yelping,—that is two of them do; but this old dog now keeps his tongue. Soon the others will stop to pant a moment. Then it is that he lets off his accomplishment. He actually in that moment of silence of the other dogs sets up the coon cry of distress! It is not in the least bit like a dog's bark or yelp, but the strangest mingle-mangle of sounds,—something like the jerky grunts and little piercing squeals of a hungry pig crying in the sty for its dinner. Now up in the tree at the edge of the hollow you can see by the light of the fire the white tip of the raccoon's nose; for that cry has disturbed his peace of mind enough to bring him to peep out of the hole.

"But the two dogs now have got breath, and they set to with their noisy yelping. Then they stop for a moment again; and then again comes that cry from the old dog like a coon in trouble.

"Now that old coon can't stand it any longer. He can't count noses in the bed-nest to see if all are home, and thinks one of the family is getting grief among the dogs. So with a spring from the tree he is down to help. Poor thing! he has given himself away badly, and though he fights like mad, yet the odds are too

much, for all the dogs are at him. He is getting worsted fast. And now goes up a real coon-cry of distress, and that fetches them; for one by one down they come, every coon out of the bed-tree.

"The work is lively now; and but for the aid given by the hunters the dogs would go to the wall. The coon has a way of embracing a dog on the back, and sawing away at the head with its shear-like teeth, and with every chance clawing with its sharp nails at the face and eyes of the dogs."

I asked the old man if a dog was always a match for a raccoon. He answered:

"No, it's a mighty good dog that will take the punishment some coons can give. A poor dog would show tail at the first dose. I think the raccoon has not only game but science when he does set to. But in the long run there is more science in the dog. Take the coon that has his bed-burrow in a bank. The dog will set at the hole, and bark and scratch. Often if the coon would keep still, but for the help of the hunter, he would tire out the dog, and so save his own pelt.

"But the coon makes the mistake of meeting the enemy half-way. That is, he will try to face the dog in the mouth of the burrow, and so if he does not put his foot in it, he does put his nose into the strong jaws of the dog. And the dog holds on, too, until he has drawn the coon out of his burrow, and then it is all up with coonie, you may believe, for that nose — well you know what the lawyers say, once in chancery, you're like to stay. Though I own there may be exceptions; the

coon may get out, and the dog may get in; but not likely."

"That word chancery, reminds me. I once took two city blades to the Horse Shoe Bay to squid for bluefish. One was a sprig of the law. A fine fish, a regular boomer, took his line. 'You're in chancery!' he shouted, but losing his head he lost his balance too, and the pull of that fish was too much; and overboard he went. The fish got away, and we had to be lively to get the poor fellow himself out of chancery."

The old man's narrative thus far was given in a plain matter-of-fact style. The above was his first gush of metaphor, — and it begat hearty laughter. Though unassuming, there was a staid, easy air in the hunter's talk which all at once dropped into a bit of dogmatic seriousness.

Said he: "I remember when a lad an old preacher who, after giving out his text, used to make a pause, and then say: 'Brethren, there's mighty deep doctrine here.' So it came to be a saying in our parts. And it is so with this raccoon business. It is too deep for me to fathom. The coon, like the bear, does his foraging almost entirely at night."

Here the old man made a long and somewhat abrupt pause. He seemed hesitating whether or not to enunciate the 'deep doctrine,' as if suspecting his auditor to be of feeble faith. However, as one whose mind was made up to dispense the truth as he believed it, he resumed his talk.

"I am now going to tell you something for

sacred truth. Coons are great froggers and fishers; and just here comes the queer thing: they fish at night, and *with their eyes shut!* Somehow they *can feel* the nearness of a minnow, when with their sharp claws, like little hooks, they yank it out of the water as quick as the snap of a spring-trap. *They never look when fishing!*"

The last sentence was uttered with impressive gravity. With a little not unpleasant archness in the tone he continued:

"As this is rather deep doctrine, I asked one of you book-men to explain it for me; but he was too high up for my figures. He said it was a way that thoughtful folks had; and that he himself, when he wanted to see into a dark subject, had to shut his eyes, and, so to speak, look into it mentally."

When attempting to extract the wood-lore from these unlettered men, the inquirer should measure his man. Even on their own lines some have a high regard for "book-knowledge"; but others hold it in contempt. Believing, to use the old man's own phrase, that he was paying out a little line to me, I said:

"You were too much for your man, and he was glad to retreat in a verbal fog. But there is this fact in the case. The carnivorous animals have whiskers, as we call them, though scientific men call these face bristles *tentaculata*, each one being an exceedingly sensitive organ. Each of these bristles has its base or root set in a little pit or follicle, and the inner sides of this little pit are lined with nerves. So that the sensation of touch is exquisitely delicate. You could

not breathe against a cat's whiskers without her knowing it; and even when Tabbie is asleep, only pass your hand over her moustache and each hair is on the alert, for a battery of a hundred nerve cells sends its combined charge of sensation to her brain. May it not be that in fishing and frogging, if it be true that then the coon keeps its eyes closed, it does so for two reasons; the one to save the eyes from the effect of the water, and the other to fix the sense by concentration of attention, so that the least sensation given by the tentaculata can be perceived?"

My little lecture on anatomy set me on the pinnacle of the old cooner's esteem. He declared "it let in the daylight." He went on to say that raccoons were good swimmers, but could not dive,—a fact which might be easily drawn from their thick fur.

I asked if the tame raccoon was not capricious, adding that I had been bitten severely by a pet coon. "Yes," he said, "they will sometimes forget themselves, and for a moment be a little savage. My daughter had a tame coon. He was very gentle,—in fact, fat and lazy. He would lie on its back to have her tickle him. None of them like confinement, and when necessary to tie him up we would have to hold it down by sheer force, to get his collar on. He was very cunning, and would know what we were after.

"I said, that the raccoon could not dive, but I tell you this one could, in a light-fingered way. When loose, we had to look out for our pockets, for he would dive into them all round, and clean them out!

"I had at that time two tame alligators. I should think each was two feet long. One night the pet coon went for them. I don't know, but I think it was, like a dog, jealous. Well, next morning such a sight! There was no use in trying to match or to save the pieces. They were cleaned out with a vengeance. For a thorough job, I thought she deserved a medal. But these alligators, — they are queer beasts! Do you know that they can turn the purest water green in four hours? I've seen them do it many a time!"

It would never have done to ask the old gentleman if he saw anything verdant in his guest; but as this somewhat staggered belief, I set it down as more "deep doctrine"; and fearing to be asked my opinion, I adroitly turned the thought by saying:

"Only the other day there was a visitor at Asbury Park who had a tame raccoon which accompanied him in the streets. Several times a day they passed a certain drug-store, when the colored porter teased the gentle animal. He did it once too often, and to his dismay the pet went for his persecutor. There was a hurried run from the street into the store, and with commendable celerity the man got the back-door between himself and his pursuer."

"Well," said the old hunter, "that's what I should call Raccoon going for Zip Coon; and Zip would have got his deserts had the coon caught him. But do you know that cooning West has no music in it like in the East? They use still-mouthed dogs in the West. The raccoon there is cunning enough to choose the

biggest trees, where the timber is heavy, so that the trees are too large to be cut down; so the dogs, when the hunters come up, must be still, and give a chance for a shot at the animal when he shows himself on the tree."

There was a tone of pride, yet regret, in the following, as of one who has made a score of ninety-nine when a perfect record required the hundred.

"I never in all my hunting lost but one coon. The dogs missed him somehow. All at once they gave him up. We tried for hours to get on his track, but it was no use, — he was too cute for us. The morning light came, and we went home without him. I think the rhyme just about hits it:

> "'The spryest bird on the pond is the loon,
> The cutest beast in the tree is the coon.'"

More might be given of this native lore of the hunter's. I have written this much of the old cooner, because of coon-hunters he is by all comparison the most intelligent professional that I have come across. Whether North or South cooning is not the sport of which the respectable will boast. The lazy and the thriftless on both sides of Mason and Dixon's line will give his best strength and resources to this pursuit, with an outlay of hard labor that might, with wiser application, insure the sweet rewards of industry. Yet, for all this, the sport has in it, if the physique for endurance be not wanting, a sort of fascination.

A distinction which makes the hunting of the opposum tame, and that of the raccoon exciting, I

have not seen mentioned. The professional hunter has respect for the plucky beast that "dies game," and contempt for the poor thing that succumbs without resistance. But these animals possess fortitude in an eminent degree; but the quality of the one though admirable, of the other is despicable. The opposum will submit passively to be kicked, and violently beaten, and show no sign as if dead,— a passive endurance, which is simply astonishing. But the raccoon's fortitude is of a nobler kind. A coon in the crotch of a tree received from some boys six bullets. A seventh ball passed through one of the fore-feet. The poor brute tried to change position, but the hinder limbs were shattered and useless. It then in deliberate fury, as if to mend matters, with its teeth amputated these members, dropping them from the tree. A final shot dislodged the brave little fellow, who fell to the ground, and with but one limb left, attempted battle with his tormentors, with a fortitude which deserved to be called heroic.

Despite associations not very elevating, the remembrance of a rollicking night at cooning, when one was a boy, will exhilarate the blood of old age. I cannot avoid extracting from a friend's letter a bit of sentiment of experience had in the pre-emancipation days: "Speaking about 'coons,' well do I remember what sport we used to have in hunting them in the South in my youth. With three or four white cronies, a dozen or more colored servants, and as many 'yaller' dogs, then away to swamps and river bottoms, and such a night of it!"

CHAPTER XVII.

COUSIN TWO, THE COATI-MONDI.



AM now going to relate some pleasant recollections of a little animal so closely related to the raccoon in some structural characters, that I have already called it the coon's cousin. Unlike the complete history just given of the raccoon, I can only tell of Coati-Mondi as a pet in confinement, for, outside of books, I have no knowledge of its ways in its native tropical forests.

Sailors on their return voyage from South America occasionally, among other pets, bring a small animal, which, because of its long nose, they invariably call an Anteater. Thus was a little stranger introduced to our care a few years ago. A glance was enough to see that it was no anteater at all, but a pretty female Coati-Mondi. Gallant Jack Tar, her master on ship, unconscious of the incongruity, had made a namesake of her, for he called her Jack.

Her Brazilian name has a musical, liquid flow which suffers sadly when we put it in our own vernacular, and call it "the earth-cat." It divides its life foraging for food among the trees and on the ground; in the one place robbing birds' nests, and

in the other, snout-wise rooting up insects and worms.

Turning from its popular name to that given it in science, we find a clear significance. The systematist prefers to name from some feature of structure. So science had already named her Nasua, and in a matter-of-fact way, for the word interpreted means — Nosie. The animal was about the size of a cat, with thick, coarse fur, of a warm brownish-red hue on the back and sides, and underneath shades from yellow to orange. The long tail was ornamented by a series of black and yellowish-brown rings.

Nosie's Peculiarities.

Her nasal prominence reminded me of a queerly gifted Spaniard, whom I knew when a boy, as employed in the government service to detect spurious coin. His "counterfeit detector" was a sensitive proboscis. By sticking this organ into the glittering heaps he literally "nosed" out the bad from the good. To that man his nose was the instrumental outfit of his profession; and to Nasua her nose was equally important. It even prompted a nickname and a juvenile pun, — "Nosie's nose knows too much!" However, we all, even the children, preferred to call her Jack, because she knew the name.

The untying of Jack, and so giving her the freedom of the house was the opening of a circus. It gave occasion for the display of her peculiar talents; and it should be said, she made the most of her gifts and opportunities.

Inappeasably inquisitive, she was incessantly intruding her nose into everything. Not allowing for an extra-tropical temperature, this little South American made a failure in an attempt to lift with her nose the lid of a pot in the cook's domain. The next attempt, a successful one, was on the knife-box, whose closely-fitting lid was pried open, and every article inspected, in happy ignorance of the proverb about playing with edged tools.

It was enough that anything was hollow to excite her curiosity; and if any sound proceeded from the inside, that would be sure to arouse to unwonted efforts the Nasuan mind, which seemed to be of a thoroughly simian type. She turned over the dinner-bell, but, unable to detach the clapper and chain, it was, after much endeavor, abandoned in disgust. A round sleigh-bell received even more persevering attention. Unable to get her nose or paws into the little hole at the side, the clatter within set her wild with excitement, and evoked a desperate attack on the vexatious mystery with her teeth. She then gave it up as a bootless job. Her familiarity with her friends was often too obtrusive. She would take forcible possession of one's lap. While lying there the ticking of a watch would so excite her desire to investigate that it was not easy to stop her even with slapping her in the face. But of this more further on.

I had not the opportunity to determine whether Nasua had that fine sense of smell which the dog possesses, and by which he individualizes his canine companions, and his human friends, and also finds

his way. But on certain lines her sense of smell was peculiar. It seemed as if the stronger and ranker the odor, the more enjoyable was the olfactory sense. Onions and garlic were simply roses in the solid. Some liniments in the medicine-chest were discovered, and duly inspected, but quietly set aside as non-comestibles.

A bottle of hartshorn was next made the subject of investigation. We had purposely loosened the cork, and promised ourselves a "nice sell"; and *we* got it — not Nosie. She was not in the least disconcerted by the drug. Having emptied the bottle of its contents, she emptied the room also of its occupants; for that volatile alkali produced the impression, that "there was something or other abnormal in the atmosphere of the air." But beyond a sneeze or two the little beast was not affected.

In fact, she had a strong nose for such things. A man gave her his tobacco-box. Resting it on the floor between her two paws, which possessed uncommon flexibility, she turned it over and over, round and round, exercising alternately her nose, claws, and teeth upon it with great energy, but to no avail. It seemed that the smell of its contents infatuated her, as she showed no disposition to stop.

The man opened the box for her. She now seemed enraptured. In went the nose and both front paws. The hands worked with the proboscis, and all three had a rapid movement. Very soon that wonderfully mobile organ had separated every fiber, so that the mass was light as a sponge.

The same man at another time let her havē his strong foul pipe; when, to my utter surprise, the tip of her velvety nose was instantly squeezed into that rank-smelling bowl. It could hardly be that the smell was even unpleasant, as the animal did not so much as clean off the soiled organ.

It would be wrong to infer that Nasua's prying propensities never got her into trouble. Though very much of her teasing, and familiarity, and mischievous cunning was inflicted with impunity, it was because the household held in respect my desire to study the animal and its ways. But Coati did not always study her company, and, speaking metaphorically, in the following instance, she did put her foot into it.

The old cat, who on principle ignored companionship with the "eccentric foreigner," had just finished her nap, and was stretching herself; an operation which means that she stood with her four feet close together, the limbs elongated, the back rounded up like that of a camel, the head erect and drawn back, and the mouth yawning widely. Such a spectacle Nosie had never before beheld; so of consequence it must be looked into. Thus in a trice raising herself almost erect, and resting on her flat hind-feet, like a little bear, she put her arms around the cat's neck, and reeking with the smell of that pipe, down went that inquisitive nose into Tabbie's mouth.

But such bearish conduct was not to be borne. So this unwarrantable intrusion was met by a reception more feline than felicitous, judging from the haste in which Nasua withdrew to a corner of the room to

ruminate on the untoward result. Her method of relieving the injured member was itself quite original. She placed it between both paws, holding it tightly, then jerked it through them, giving a violent sneeze every time it came out. The sneezing was genuine, because it was involuntary. The liniment was as nothing, and both hartshorn and nicotine had signally failed to get up anything respectable in that line; but that *cat-nip* pure and simple, brought the tears to her eyes.

Though the colors are warm, the fur of Nasua, which is somewhat long, is rather coarse and wiry. But quite pretty was the pattern of our animal's ears,— they were so clean, trim, soft, and small. Though rather pert, they had an air about them that was really amiable, and such as the canine fancier would pronounce elegant. Our pet was not averse to a little fondling, and I well remember the first time she climbed upon my lap. There was no looking at my face first, or feeling the way, as a dog does, to see if he may venture upon one's patronage. It was thoughtless familiarity. It pleases me better to believe it was the latter.

Her inquisitiveness made fondling brief or difficult. If she meant to nestle on my lap, as did Puss, or the little dog, she was not able to be quiet long enough to carry out her intentions. The moment her head came in contact with my vest, those pretty ears suddenly quivered. The ticking of my watch had excited her. Down went that ubiquitous organ into the watch-pocket. Failing with the nose, she made a desperate

effort with that and both fore-feet all at once. Still unable to solve that case of mystery, she thrust her nose down by its side, and for several minutes, with monkey quaintness, listened to the ticking of mortal Time.

I had allowed myself to overlook an important fact in Nasua's mental make-up, namely, that her curiosity could not be allayed unless it was gratified. Child-like, it might be diverted. On the above occasion she was allowed the liberty often taken by the little dog, of going to sleep on my lap, while I gave myself up to the enjoyment of my book. As the work then in hand was a new volume of "Transactions" of a learned body, the subjects being congenial, and engrossing, and requiring very attentive reading, I became quite absorbed in the book.

Her nap finished, I did not notice when she left my lap. Soon a noise was heard like the tearing of paper. The wonderful little beast had abstracted my pocket-diary, and in violation of all propriety was making heavy extracts from it. Those keen incisors were scissoring away—a full leaf at a time! She had even filched a five-dollar note out of the pouch of the book, and as if making change, had converted it into fractional currency. Excepting a little verbal explosion, in which I denounced my pet as a meddler and pick-pocket, I kept my temper, simply banishing her from the study, and gathering up the fragments.

As Coati's scientific name Nasua, and her sobriquet Nosie, both mean exactly the same thing, it is time to speak of her more particularly in respect to that

remarkable organ, her proboscis or nose. In a similar manner, though not quite to the same extent, the nose of Nasua, like the trunk of the tapir, projects far beyond the mouth. In each instance it is an elongated nose, though the proboscis of the greater beast is sufficiently prehensile to curl around the leaves of trees, on which it is browsing.

At my first acquaintance with Nasua, I was desirous to see if it could drink from a deep vessel, and how it could do it. So a narrow deep mug containing about a gill of sweet milk was set before her. To my surprise and delight, she instantly, and without the least ado, turned the end of the proboscis up towards her forehead, and in the easiest way, judging from the very little effort required, she soon had the vessel dry. It was very neatly done. The organ was not even wet.

She enjoyed the milk greatly, and as to that *turning up of the nose* at my proffered dainties, that was her way when she liked anything. Turning up her snout was symbolically smacking her lips. It was certainly comical, and yet quite winsome if fairly understood.

If feeling naughty or "out of sorts," Nasua never "looked down at the mouth" but at the nose. When displeased, or as I might say disgruntled, she expressed that state of unpleasantness by turning her nose down until it dropped under the lower jaw. She had a marvellous command of this flexible organ, and could turn it any way she pleased, up or down, to the right, or to the left.

And that nose could express the emotion of surprise,

or embarrassment, as well as of displeasure. The first time she was made to confront a mirror in my presence she seemed fairly startled, if not dazed at the vision of her second self. Instantly her countenance, — that is her nose fell, and so low that it actually went under the chin! It was the most ogreish way of looking down at the mouth I had ever witnessed in man or beast. At such times her proboscis had the look of a tapir's in repose. All this made it still the funnier; as there was no repose in it. It was the expression of the strain in the animal's mind of an embarrassing perplexity, — as if a lady, smarting under an impertinent annoyance, should say: "Who is that fellow staring at me?" This singular grimace, with its squeaky little grunts, presented a very funny manifestation of puzzled astonishment.

I confess my inability to quite take in the story of those Australian savages to whom a picture of the queen was shown, and the question put: "What is it?" and the nearest answer got was: "It's a kangaroo!"

With domestic animals usually the first sight of themselves in a looking-glass begets surprise, with a little bewilderment; but it has seemed to me generally there is some sense of the meaning of that which is seen. Monkeys have been known under such an experience to manifest a surprise not unlike that of a sudden recognition, and then to pause a few moments as if reflecting, and then to look behind the glass for the object. I believe both they and domestic animals very soon get accustomed to the illusion.

It seems necessary to premise a statement, to the effect that Nasua has zoölogically a close alliance to the bears. Elsewhere I have put this animal into the membership of a group that I have called coon-bears, one of the considerations being the plantigradal structure. And like the bears our Nasua was literally omnivorous.

For an airing we often tied her by a long tether, to a flower-stand on the lawn. As just indicated, she would eat and drink almost anything. She would catch mice, and would not leave a particle. The same was true of sweetmeats, which she would sometimes obtain by stealth. She had nearly all the appetencies of domesticated swine; and in appearance, and in a certain stiffening muscularity, the end of her nose was essentially a swine's snout.

It was with real delight that I now beheld the purpose of this curiously-tipped organ. Very interesting it was to see that little beast plow up the green sward with the tip of her nose, — and so easily. Here appeared the swinish acuteness of scent for insects and worms, and the swinish facility for rooting in the ground. With considerable rapidity furrow after furrow was made, of about the width of a man's thumb or a little more. Whenever a worm or insect was found, the muscles whose tension stiffened the organ for a rooting purpose were now relaxed, and tension was put upon another set of muscles, so that the mouth could extract the object from the furrow. Nasua's nose, then, like the snout of the peccary, could be rigid or flexible at will; but in the latter quality Nasua excelled.

As seen in menageries, Coati-Mondi appears to disadvantage, its gayly colored pelage making but a sorry show. Ceaselessly active in its small cage, its fur gets a frowsy appearance.

Nasua's Tail.

The tail of Nasua is quite suggestive of the raccoon; but Nasua's tail is a much handsomer affair, — longer, and with rings more numerous, more pronounced, and of gayer colors. The few caudal rings of our northern raccoon are of an ashy white. Those of Coati-Mondi are a warm yellow. The fur of both animals is coarse, that of the raccoon being the more valuable because more fleecy, a little finer, and uniform of color. Besides, the common raccoon, unlike its exotic cousin, is adapted for the northern winters, and the pelts of northern animals must bear the palm for excellence as furs.

But more about Nasua's tail. With admirable intelligence, our pet could put this beautiful appendage to a remarkable use. Once when she was tethered by a string to a chair, an egg was placed on the floor at a tantalizing distance. She could just touch it with a paw, and that touch caused the prize to roll out of reach. She then turned her hind-feet toward it, pulling hard so as to stretch her neck; still even with a hind-foot she could not touch it.

With the Coatis, most emphatically, "eggs are eggs." The logic of events was now, "Get it if you can!" All this Nasua well understood, for she turned tail on the subject, — not, however, in despair or disgust,

as did Reynard on the grapes, but strategically. She gathered herself up, and looked at the coveted object with speculative eyes. Then she swung herself round again, straining hard on the tether by the neck. She then curved the tip of the tail so as to make a little hook. Now she grasps the base of the tail with one paw, as with a hand, thus steadying the organ, all the time pulling with her neck at the tether, so as to lengthen her body in the direction of the coveted prize.

She next slowly and cautiously rolled the egg, by the curved tip of the tail, through a section of a circle; or more correctly, in that precise curvilinear movement which produces what the mathematicians call a prolate, or inflected cycloid. This movement of the egg by the hooked tip of the tail was conducted with admirable steadiness and precision until it was brought within reach of one of the front-feet. The egg now seized and held in both hands, sitting on her hind-feet, like a bear, she cracks it, extracts the contents, and neither spills a drop on the floor, nor so much as soils that wonderful nose; for, among her many gifts, is her soft and extensile tongue.

This caudal expedient is sometimes found with the American show-monkey, when a bit of gingerbread is put by the roguish boys at an inconvenient distance; but as in such instance the tail is prehensile, — is, in fact, the monkey's fifth hand, — such a feat is no great thing after all, but is quite in keeping with what the organ is intended for. It is, at most, but little more than that instinct which structural or functional capacity might evolve.

The Cebus, or monkey of the menagerie, does not, like Nasua, show the tantalizing boy a trick worth two of his by turning hand and tail into a compass, and describing a prolate cycloid on the floor. Actually Cebus invents nothing. But, in Nasua's case, it is a studied, thought-out animal contrivance, pure and simple. There is, too, a latent fact which peeps out here: for this bending of the caudal tip looks to the faculty possessed by its cousin, the Kinkajou, whose curling tail has a prehensile or grasping facility of high perfection. But of Kinkajou consideration will be made further on. Besides that caudal achievement in getting the egg, our little plantigradal pet sat up on her hind feet, and used her hands in monkey-style to enjoy the feast.

Nasua's Mental Traits.

Nasua showed considerable attachment, — her preference being the ladies. She would often, when tied up in the kitchen, sit for many minutes, her little black eyes looking wistfully at the door through which the mistress of the house had passed, and all this time crying pitifully. It was a plaintive cry, in the minor key, and yet a little funny, for it often resembled the chirping of a cricket, though not quite so shrill, and the intervals between the notes were a little longer. This tiny cry required for every note a muscular exertion, extending far down the sides of the body, which led to the suggestion that "the plaint came from the depths of the heart."

Though at times somewhat irascible, this little ani-

mal was very playful with those who could understand and humor her ways. And her method in play was a good deal like that of a dog. She would take my fingers into her mouth, and make believe to bite, and would roll on her back in manifest glee. It required at first some courage to take part in her gambols. On one occasion, thinking that she gave me too hard a nip with her teeth, I returned her a smart slap in the face. This experience was novel and startling, and caused her to open her mouth and chatter as a terrified monkey.

On another occasion she so far forgot herself as to bite me rather severely. It was but one snap of the mouth, — a mere spurt of temper. I gave her such punishment as I regarded judicious. For a while she kept up a snapping at me, which was accompanied by a monkey-like chattering of rage and fear. At last she laid down her head in submission. I then stroked and patted her. It was all made up, and we were friends again.

On this matter of punishment I soon learned an important fact. You might slap and shake this little beast quite severely, when her will was aroused, or a slight fit of temper was on, without subduing her. Animals have idiosyncrasies, especially the more intelligent ones. Though she fought back on my slaps with the hand, she had a wholesome dread of the rod. A twig not thicker than a straw was sufficient. A blow from this, although it hardly ruffled the fur, would reduce her to instant and complete submission. The exhibitor of wild animals understands the virtue of his little whip.

Frank Buckland's monkeys regarded the broom with deferential awe.

The attachment of this interesting animal to her new home was intense. I frequently caused her to be taken to the commons and set at liberty among the trees. Considering that the coati is a thoroughly arboreal animal, albeit with some ground propensities, and that such is its agility that it descends trees head first, one would suppose that this freedom would awaken the dormant natural habits and cause her to stray, but she would invariably hasten home by the shortest route possible; and if on her return she found the doors closed, she would sit on the steps and cry.

I have spoken of the animal's "new home." This needs to be explained. The truth is, we had borrowed her, but under such circumstances that I regarded the loan as a gift, — the real owner being tired of the poor thing. At last cupidity seized the man. Observing my great interest in the animal, he inferred that if so regarded by a naturalist it must have a high money value. So he offered to sell her, but set the price beyond the worth of the pet.

After waiting a few days, probably to force a sale, he sent his son to fetch her home. My wife, the children, and myself took it hard to part with the pretty creature. But there was no help for it. So after some patting and stroking of Coati by all of us, the boy took her up struggling in his arms, hugging her to his breast by main force, and left, crossing the commons on his way.

A few minutes only had passed when that well-known cricket-like cry was heard at the kitchen-door. It was opened, and in bounced Nosie, overjoyed at getting back to us. As to the lad, she had treated him shamefully, and the poor boy, obliged to let her go, went home crying. Being left with us again, she soon forgot her troubles; and we had begun to think that she was as good as ours.

One morning, at an early hour, Coati was missed from the kitchen. A search was set up. The ringing voice of our little one was heard, with merry laughter and the occasional words, "Nosie! Nosie!" And so it was, Nosie was in bed with the little three-year-old, and they were having a high time together. This trick she played whenever opportunity allowed.

Often at an early hour, before the child was awake, have we found her between the undisturbed bed-clothes, self-ensconced in the arm of her baby-master. Of course, prudence dictated that this must not be allowed. But in this matter she was often superior to our vigilance; for she would watch us, and leave the room so quietly, stealing up stairs with such noiseless feet, that often it was all done before there was time for suspicion.

A word is necessary as to the peculiar temerity of this animal. From two points it was liable to give way to extreme impulsiveness, — the excitement of opposition, or of inquisitiveness. If anything attacked her, whatever the object or odds might be, she would face the assailant, and close in with her shrill little squeaks of rage, and in a wild, reckless sort of dash.

If one slapped her, whatever might be her terror, she would rush upon and snap at the hand. And her keen saber-edged teeth were too formidable to be trifled with.

No monkey could be a more importunate or impertinent teaser than was our Nasua; but the monkey shows sagacity with his jokes,—for he is wary, and always adroitly leaps aside of consequences. I have watched our pet tease the cat with imperturbable persistency, until Tabbie, unable to tolerate matters any longer, has struck her sharp claws into that soft proboscis, then moved away, leaving her tormentor dazed in astonishment.

The nose rubbed a little, and the pain over, almost in a moment forgetting all her experience, she would turn her attention to the setter-dog, and, despite his growls and threatening teeth, would keep up a worrying almost upon system, catching at his tail, nipping at his legs, and even poking her "India-rubber" snout into his ears. At last the poor brute, fairly goaded into rage, seized her like a rat, and but for my prompt interference Nasua would have been seriously punished for her impertinence.

One morning Nasua broke her tether in the kitchen, and uninvited made her way into the dining-room, as we were at breakfast. She at once took possession of madam's lap. Thus established, her first act was to poke her nose at the hot coffee-urn. This evoked a squeak of pain. It was supposed that she had had enough. Not quite. Her next essay was on a cup of hot coffee, with a similar result. She now smelt the

contents of the sugar-bowl. This discovery so excited that "sweet will" of hers that instant removal became imperative. She would upon opportunity get into the pantry, and climb the shelves as nimbly as a monkey, and in a trice off would go the lid of the sugar-box. When being taken down, her cunning and foresight would be shown in her rapid movements; for she would instantly stuff her mouth and fill both hands, then sit in a corner enjoying her pilfered sweets.

Later in the day of her dining-room experience she tried to capture a wasp. She struck it down, and held it a second under her foot. This was met by a response, addressed solely to her understanding, of so pointed a nature as made her chatter and prance with distress. Disabled in one wing, the insect could not fly away. Although still smarting from the wounded foot, the moral of the lesson is only half learned. Coati cannot give "little yellow-jacket" up. So she tries the wasp again,—this time with her nose. Alas, that sting! Miss Nasua now finds that other little folks, besides herself, can utilize their tails; for, in proof of this she receives a burning sting such as exacts a staccato outgush of agony of truly simian expression.

I can recall but one lesson which she ever took sincerely to heart. The old cow was quietly ruminating near the house. Nasua that day had the freedom of the lawn. With her usual temerity she made an attempt to climb one of Cushie's legs. The cow raised her foot to shake the annoyance off, and in setting it down she put her hoof on Nasua's tail, and there

standing, gravely ruminating, held her fast to the ground. Her rapid, chattering cry brought one of the family to her rescue. The tail was very badly hurt. Ever after, between Nasua and Cushie a respectful distance was maintained.

I think that in a sort of clever cunning Nasua was not unequal to some of the monkeys. She would lie still as if asleep, while one eye would scrutinize the movements of the one she suspected. This perhaps was sly cunning; but on the line of animal morality all this could be easily borne with.

I regret to say, however, that she did not believe in our standard of sobriety. The discovery was made by accident. It was summer-time, and the flies were numerous and very troublesome. It happened that the kitchen that afternoon was vacant, and, unwilling to use poison, I thought of an experiment to intoxicate the flies. So a saucer of apple-brandy and sugar was set on the table for the delectation and destruction of the annoying diptera.

Returning to the kitchen soon after to learn the result of my experiment, I found it had been effective where not intended. Nasua was on the table, and she had taken down nearly all the apple-brandy and sugar. I lifted her to the floor, and watched the result with painful interest. In a few minutes the little beast was drunk. She staggered about as flimsy as a rag-doll. Then she betook herself to her corner; and I will give her the credit to say, that for an intoxicated person she bore herself with becoming prudence; for, though not going to sleep, she kept very quiet. There was in

her eyes a sort of tipsy wisdom, and an outlook of maudlin gravity, but otherwise she gave no sign of sound or action. She was I thought distressed in the head. That she should be so quiet somewhat surprised me. Once afterwards, to see what the animal would do, she was purposely exposed to the ardent. It was found that her former experience had not tended to reform, so the thing was stopped.

But poor Nasua! The boy had come again for her. This time he brought a rope. He now would lead her home like an unwilling dog. That was the last time we saw our Nasua! The dear little thing was consigned to a dark, cold cellar, thence taken to New York, and, as we learned long afterwards, sold for a small pittance to a saloon-keeper. Here the engaging and interesting little creature got into bad company and bad ways,—and erelong came the end, sad and shameful!

CHAPTER XVIII.

COUSIN THREE, THE KINKAJOU.

IT is an interesting fact that in a direct line one of Nasau's congeners of a higher rank still exists in the same forests of South America. This is the Kinkajou, *Cercoleptes caudivolvulus*, reduced to one species. When tamed it is an interesting little animal, with amiable ways and monkey traits. The tail is prehensile, in that it curls around an object, which with its plantigrade feet gives it in Germany the name curling-bear. Like the monkey, it will hold its food in one hand and break it and feed it to the mouth with the other. So, then, Kinkajou and Coati-Mondi come honestly by their monkey-tricks, having a clear title by heritage.

The length of a full-grown adult would be from tip of nose to base of tail about eighteen inches, and the tail about twelve inches long, or a little more, the body being as large as a medium-sized cat. The snout is short, a little tip-tilted, just enough to impart an air of inquisitiveness, and at the same time an innocent, almost amiable look.

Like its neighbors, the South American monkeys, it can coil its tail with at least two prehensile

turns around the branch of a tree. Its quadrumanous dexterity, and its monkey manners of feeding from either hand, caused it formerly to pass among naturalists as a lemur, one of the lowest of the quadrumana, or monkey tribe. Thus it had a systematic name, *Lemur flavus*, the Yellow Lemur, "its pelage favoring that color. The hands have no opposable thumbs, and the fingers are webbed for nearly their whole length. Although the heels of the feet are well raised, it walks with a plantigrade step."

The tongue is remarkable, being long, slim, very extensile and flexible. With this it is able to penetrate into crevices and holes in search of insects, and being fond of honey, even to probe the nests of bees. Yet we shall see that a tame specimen did not take to these delicacies when offered. In its native home it loves the trees, being a facile climber, and with its caudal apprehension and all-round handiness, it is admirably endowed for an arboreal life. When descending it does so head downward, like the Coati.

Unlike the animals already described as living pets, with whom I was on the best of terms, and whose ways were seen with my own eyes, the Kinkajou I was never able to obtain alive. Happily all that is made up to me by the kindness of Mrs. Olive Thorne Miller, whose charming sketch, "A Little South American," in the *Cosmopolitan*, she put generously at my service. The sketch is a bright description of her experience with and observation of a tame Kinkajou which she had in her possession eight months. Besides this the lady has in corre-

spondence given me some interesting facts concerning her pet.

These creatures are exceedingly impatient of light. Little Kinkie could not tolerate the light, however dim it might be. He had for a sleeping-nest a round spice-box eight inches in diameter, in which he was snuggled like a ball of fur the livelong day. But when it was dark, if he could get out of his cage, and have to himself the free range of madame's sitting-room, there would be a rare show. As during daylight no coaxing could wheedle him out of his nest, — for he was utterly proof against all persuasion, — if alone, and at liberty, in a dark room he became the very Puck, or impersonation of roguish mischief.

"Woe to the household if he succeeded in opening his door! Every standing thing that was upsetable in the room was upset, every hanging thing not firmly secured was pulled down. Pictures were taken from the wall, statuettes turned over, baskets and boxes emptied. And when daylight discovered the mischief done the guileless author of all the mischief was curled up in his box, or on it, sleeping the sleep of innocence, and on being aroused turned upward a gentle, winning little face that disarmed the severest housekeeper at once."

And supposing the little prisoner had been unable to get out of his cage, the morning would show that Kinkie had done his best in a limited field. The cage, so neat and tidy when his mistress left it, would be a scene of desolation.

"The paper that had neatly covered the floor, torn

to bits; sawdust, scattered out on the carpet; his much-prized nest-box, gnawed, pulled from its fastening if possible, and upset; water-cup bottom up, and the cage flooded; heavy, woolen blanket torn to ribbons, or made into 'drawn work,' more intricate than any design in the pattern-book. These were the results that proclaimed his night's amusements.

"And when thus restrained of his liberty he was my gentle pet no longer, but a wild beast trying to escape. Yet even then, when his pranks were wildest, if I lifted the blanket and spoke to him, he quickly thrust out a cold hand to be warmed, and gently rubbed a soft nose against my hands, though two minutes after I left the strange sounds of destruction would be resumed."

His mistress would often of an evening give Kinkie his freedom of the room. She says of the odd little creature: "His manners were most curious and uncommon. From the moment he aroused himself, stretched his limbs, yawned, thrust out his long tongue, and climbed down from his open cage for a frolic, he was most interesting. He was deliberation itself in his usual movements, hobbling around the room like a small bear, his long hind legs and turned-in toes giving him a peculiarly awkward gait; climbing tables and chairs, and coming down head-first in a cautious manner. If startled, he galloped clumsily back to his corner, scrambled into the cage, pulled himself up to his nest, curled down out of sight, and stayed there till all was quiet again.

"When the room was of a temperature to please

him, and consequently intolerable to us, he liked to lie outside the blanket in the oddest attitudes; sometimes flat on his back, with legs stretched to their utmost, sometimes on his stomach, with head hanging over the edge, in a way to break his neck, one would think. Head down was always a favorite attitude with him.

"The positions into which the kinkajou put his incredibly lithe body were marvelous; it often looked as though he had not a bone under his skin. He could bend his back in a perfect bow either way, turn and twist arms and legs into any impossible position, flatten himself to creep under a low bookcase, or narrow himself to pass between two books on a shelf.

"His eating was an interesting operation, and took place only at night. His diet was entirely of fruit, which he invariably took in his mouth, but used a hand, sometimes two, to aid in managing it. He bit a piece off with the side teeth, threw back his head, and crushed it between the tongue and the roof of the mouth, which was crossed with bony-looking ridges. When he came to me he ate apples; but the first time he saw a banana he fairly snatched it with both hands, so that I could not get it away to peel for him. He tore the skin, and despatched it with such enjoyment that he was furnished with bananas from that time.

"Generally he ate sitting up like a kangaroo, but when the piece was large he sometimes laid down on his back or side, and brought both hands and

feet into use to help. Occasionally, if convenient, he sat up against a book or a stick of wood, leaning on one elbow with a most sentimental air."

I am glad to say for Kinkie, that his mistress, in this matter of eating, gives him a good character. He was both moderate and particular, which cannot be said for his cousin Coati, who was actually omnivorous, and gluttonous at that. Kinkajou's preference was the banana, and of these, though very fond, he never ate more than three in the twenty-four hours, and often not more than two. He was not only delicately dainty, but "deliberate to the last degree," taking time in eating, as if in thoughtful enjoyment of his meal. This is in its way refinement; for generally animals will bolt their food, *á la* restaurant, like "the paragon."

Of the appetencies of Kinkajou Mrs. Miller's account to me is remarkable, differing so much from his cousins, the Coon and the Coati. The raccoon has an appetite for a very varied fare, and not always very nice about it either, albeit his much washing. As for the Coati, nothing comes objectionable, unless it be actually putrid. Woe to my lady's conserves or sweets, if he get into her pantry! He will literally gorge himself to a surfeit; and let him even then get out on the sward, and he will root up the earth-worms, and devour them with avidity, as a top-off to the marmalade.

In the matter of pets, this niceness and cleanliness in the animal's choice and use of food is a desirable quality. Says the lady: "I could not induce

my pet to touch any insect at my command, and he did not show fondness for sweets." This was singular; moreover, he never touched the ardent, preferred water, ignored coffee, would take milk, and upon occasion a sip of sweetened tea if weak; all which was wise in a creature of such high nervous organization.

And if particular in dietetics the "kinkajou's preparations for sleep were no less peculiar. He often curled his tail from the tip into a perfectly regular coil, which he used for a cushion, sitting upon it, and letting his pretty little finger-like toes hang over the edge; but if he wished to sleep, he placed his face on this cushion, put his hands around and over, or tucked them in behind his head, and drew the long hind-legs and feet up around the whole, making a complete ball. Sometimes when on the floor he curled the tail around outside. This was his favorite attitude for sleep through the day."

Mrs. Miller says of her pet: "He was one of the most nervous and observing creatures I ever saw; not a movement or a sound escaped his notice when awake. He would lie on my shoulder or the back of a chair by the hour, and watch the shadows, — especially his own, — as they fell on the carpet; he listened to the noises outside, cats, dogs, the elevated railroad, — the latter with manifest disapproval.

"He never liked to have any one come up behind him. A sudden noise startled him greatly, and his tiny hand had always a nervous jerk when I held it in mine. He had a most sensitive organi-

zation. At a distance, he liked to sit up and look at us, but if we moved to approach him, he turned his back, cuddled into a corner, or buried his head under a blanket. It was not fear, for he readily climbed up on us, and, in fact, at last became troublesomely familiar.

"He was playful in a quiet way. He amused himself with a string, as a kitten does, lying on his back and using all-fours to toss it up and pull it around. In the same way he played with a long gold-chain, biting and tossing it around, and he was extremely ticklish. His principal plaything was his own tail, which had a curious appearance of independent motion. It curled around his neck, laid itself over his eyes, or moved back and forth before his face, while he, lying on his back, seized it, pretended to bite and worry it.

"The little animal was pretty as well as interesting; about the size of a small cat, with a furry, prehensile tail, which was always curled over at the tip. He had kinky wool, of a beautiful golden-brown color, darker on the back, and shining golden tips in the daylight; this stood straight out all over his body, excepting on the back of his hands, where it was silky and laid flat."

His hands might be the envy of a dude, for "though without opposable thumbs, they were beautifully shaped, with long delicate fingers, ribbed to the knuckles, with double joints, enabling him to bend them either way, and soft, thick cushions or pads inside, so that he was shod with silence. His feet were exactly like his hands, excepting a long heel-bone. Both hands and feet had

long claws instead of nails, and were flesh-colored inside.

"His head was really beautiful, shaped somewhat like a cat's; the face was of a grayish color; he had delicate, sensitive ears, not large, but very wide-open and movable with every emotion; his eyes were enormously large for his size, very full and prominent, black and gentle in expression, and over the inner corner of each was a little tuft of hair like a cat's whiskers, about an inch an a half long. He had also whiskers on the sides of his nose like a cat's, and another tuft of similar length under the chin. The nose was bare, and the nostrils were the peculiar shape of the lemur's. His tongue was of great length, and very thin."

The measurements given me of this interesting pet by the lady are: "The length from tip of nose to root of tail, fifteen inches, while the tail itself is sixteen inches long. The girth of the body just behind the fore-limbs was eleven inches and a half." The animal was young, and I should think not fully grown, and the length of the tail in relation to that of the body seemed to me remarkable. As this member was covered with long hair, it was really beautiful.

Some of his habits showed the instincts of inheritance. Compared with the formidable foes in its native forests, this pretty creature was feeble indeed. Hence the incessant circumspection, and the dislike of the pet to have any one behind it. Says the lady:

"Stealthy movement and almost entire silence were characteristic of the kinkajou. In all the time he lived with us we seldom heard a sound from him. Once,

when accidentally hurt, he uttered a chattering sound like nothing so much as that made by a stick drawn across a picket-fence, at the same time showing his teeth like a snarling dog. He repelled strangers with a rough breathing, a sort of "huff." When asleep, we sometimes heard from under the blanket where he lay a low "yap" like a dreaming puppy's, or a whine like a dog's. Save these few times, he never uttered a sound.

"As time passed, and he became better acquainted and lost all fear, he grew more affectionate and sociable. Especially was he so with his particular mistress and friend, to whom he had always showed partiality. Even in his wildest days he would put a soft hand through the wires, generally both of them, to be held, or to seize a finger to lick. He liked to have me hold my face near the wires, and let him put his hands on it. Every moment that he was out he insisted on being upon me, my lap, my arm, or, best of all, my shoulder, where he would lie at full length, head outwards, to watch the room, with his tail around my neck as an anchor. Nor did he lie quiet even there. One moment he would suddenly turn and lick my cheek; then, as unexpectedly, would he take a gentle nip at my ear, and first and last and always jerk at my hair, which he seemed to regard as made for him to pull down, tangle, and play with.

"Of this toying with the head he made a business, standing on my shoulder, putting both hands on my head, and settling himself for a good frolic. What he wished to accomplish I never found out, for no one

could long endure the rough treatment. If I succeeded in keeping him off my shoulder, he would establish himself on my arm, which he clasped with all four limbs, and held on for dear life, while he licked or playfully bit my hand or wrist. To shake him off was utterly impossible; he had a wonderful grip, and the more one shook the closer he held.

"As the weather grew warm, this little fur boa was not so comfortable around the neck; neither did I enjoy the warm little body glued to my arm; but it was impossible to get relief. If I put him down, or upon some one else for a rest, he would climb over them and amuse himself till I made some movement or spoke, when instantly his quaint little face turned, he abandoned all else, and ran for me. When I made violent effort to drive him away, pushing or in any way exciting him, he never was scared; the more he was alarmed, the more frantically he would run for me, clamber up my chair, and mount to my shoulder, as though that were his haven of refuge. The more I disturbed and pushed and tried to shake him off, the tighter he clung, and the more persistently he returned. Sometimes, when particularly affectionate, he threw all four arms around my head so as completely to embrace it, and buried his teeth in my hair."

There is an overdoing of a good thing. Amiable attentions may be so persistent as to become as bad as persecution. With summer heat, and this adhesive living pillow on the head, and a bushy live boa coiled around the neck, — it is little wonder that

the kind mistress should at last break down: "He would throw his tail and perhaps an arm around my neck, and hold closely enough nearly to choke me. This soon became intolerable. I could neither read nor do anything, except devote myself entirely to the kinkajou."

As a pet this Kinkajou had some very good qualities. In answer to inquiries I learned from his owner that he was not capricious.

"He was one of the most even-tempered little creatures I ever saw. He never showed anger but once, and then he was hurt. His anger then went no further than merely a showing of the teeth and uttering a sort of chattering sound."

I asked: "How did he act under chastisement?" To this was the answer "that he had never been chastised, so it was not possible to tell."

My next question was: "Had he any preference?" And the reply was: "Decidedly. He was extremely fond of me (his mistress), and next to me he liked my daughter. But he never liked gentlemen very well."

Of the animal's moderation in eating enough has been already said.

But, alas, for poor little Cercoleptes! His cutting-up was carried to an incompatible extreme. Kinkajou's high jinks had exhausted all forbearance. His very affections became too fond. The creature's attentions grew worse than the exactions of the unremitting baby.

So the end of toleration came, and his kind mis-

tress resolved on a parting: "The weather was now very warm, and I could not endure his embarrassing attentions. I would not keep him confined to his cage, so I presented him to the National Museum at Washington, where he was not so gentle and amiable as he had been with us, but bit and scratched, and, in fact, went quite back to savagery." For it is a very serious let-down, being made a vulgar show-animal to the unfeeling public, after playing circus on his own account in my lady's parlor.

As a philosophical writer on nature, Buffon formerly held a high rank. Yet his language is: "The animal is a purely material being, which neither thinks nor reflects, but which, nevertheless, acts." "The principle which determines an animal's actions proceeds from a purely mechanical influence." But we will even in the three cousins consider it proven that these lowly beings can "remember, combine and reflect."

Of Nasua, and Procyon, there are several species, but of Kinkajou but one. This playful innocent is the last of his tribe; for it can hardly be doubted that in the ancient days the forests of South America were the home of other species of cercoleptes, perhaps though not so intelligent as the species whose acquaintance we have just made.

CHAPTER XIX.

THE LINEAGE OF THE COUSINS.

AFTER chronicling such achievements of Coati-Mondi and her Cousins Coon and Kinkajou, shall we not institute a search into their genealogy, and so establish or set aside our suspicion of distant monkey relationship.

First, I must recall a generalization in zoölogy, which when first made awakened profound interest, Louis Agassiz leading the way.

Agassiz pointed out with nice precision the existence in certain animals of two sets of traits, — one proper to, and marking their peculiar individuality as members of an order, or family; and the other set destined to a fuller unfolding in animals yet to be created.

In a word, the species in question was regarded as looking forward to or foreshadowing in these seemingly eccentric traits the characteristics of animals yet to come. As, for example, take the ancient Ganoids, or fishes covered with shining, bony scales, as the word signifies. Their common representative to-day is the sturgeon, which, though a fish, has structural and physiological points that belong to the reptiles. Regarding these curious traits as put together in one individual,

and in a sense to be yet separated from it, and specialized in other and higher animals, Agassiz invented a term to express these facts, namely, "synthetic type." Dana prefers the phrase "comprehensive type," and Guyot used the term "undivided type."

Something of this was discussed when considering the structure of the Water-mole, and the Porcupine Anteater of Australia.

It must have appeared to the reader that Coati had structural points suggesting other animals, and even their habits, — for instance, its plantigradal feet, how like the bear, so much as to cause it to be called the earth-bear. Then come those traits so simian or monkeyish, — that unappeasable inquisitiveness, and that capacity for quasi-human expedients, and that monkey vice of incessant teasing, and that monkey chattering, expressing terror or distress.

The reader should be told that in scientific work to the sober-minded is allowed that which is called the tentative hypothesis. It is an effort to untie or to cut the knot of a difficulty, and can only be allowed to the honest theorist who is feeling his way. There is a vast difference between scientific romance and the scientific imagination. This last was a gift of Germany's great poet. Goethe's guesses were neither blunders nor vagaries. His theory of the genesis of the flower, of the vertebrate origin of the skull, and his forecast of the doctrine of descent, were all marvelous births, but legitimately begotten, the offspring of pure scientific imagination.

In tracing the pedigree of some regal line, perhaps

we should reach a very ancient Norman stock. But however ancient, it would be the Norman of civilization, not his savage progenitor of the stone age. This would be as far up the stream of the past as we could sail. So with our Nasua, although the stretch of time is vastly greater, we must stop at the origin of the Educabilia, the quasi intelligent animals, those namely which have the cerebrum or frontal brain relatively large and roofing backwards, or overlapping the cerebellum or small hinder brain.

1. As to that quadrumanous alliance of Coati; on what line of reasoning may the genealogy be traced? My first impression of this fact came to me as a conviction of the imagination. I had so studied the living animal as to know its ways, and I came to suspect, as an inheritance, the monkey strain. I could see the traits, but could not demonstrate their physical or organic relations.

2. That which backed up the imagination was the psychological or mental manifestation. Here were data for comparison, in such well-marked lines ran the parallels of expression of the Nasuan and the monkey mind. The hints afforded in the complex use made of the hands and the tail,—the many monkey tricks or antics, which came not of training, but of real generic aptitudes,—these all pointed to a physical correspondence, and looked directly to a very remote ancestral inheritance.

3. I think it was in 1873, that an interesting anatomical discovery was announced by the great academician, the successor of Cuvier, Henri Milne-Edwards.

He had dissected a Nasua and had discovered in the limb bones of this animal structural alliances to the lemurs or lowest monkeys. Here was, indeed, a pleasant and important confirmatory fact.

4. But to round out the proof, one more class of evidence was needed, the testimony of palæontology, the science of fossils. In behalf of the relationship of the recent, or living creature to the extinct animals, would the fossils bear witness in favor of my theory? I did not have long to wait. The promise of confirmation came in a note to a scientific paper read before the American Philosophical Society, by Professor E. D. Cope, in April, 1873. It read as follows: "Dr. Lockwood, in a recent number of the *Popular Science Monthly*, expressed serious suspicions of the quadrumanous relationships of the Coati, little thinking at the time that the specimens to confirm his view were at that moment in the hands of palæontologists."

I regret that space will not permit me to take down in detail this evidence from Nature's own record. I can only say that fossil bones had been found in the Eocene formation of Wyoming, which demonstrated the ancient existence of animals whose skeletons had features characteristic of the Raccoon, the Coati-Mondi, and of the Lemurs, or lowest monkeys. And not only have the demonstrations of Professor Cope completely established the supposed relationship, but they have been fully confirmed by those of Professor Marsh and Professor Leidy, whose discoveries in the same region are in full accord.

I wish my young readers would peruse this short

chapter over again, and try to master this argument by which I have established the truthfulness of that vision which the scientific imagination obtained in my study of those recondite creatures, the survival of a fauna almost extinct. Then were seen the realities of a hidden framework. The sum of it all is this: The genealogy of the three cousins, Coati, Raccoon, and Kinkajou, shows them to be the lingering representatives of animal forms long since passed away.

And is there not in this sketch of the animal life of the past and present of our continent a prophecy of the far-off future? As shown by the fossils, the Old World in its now extinct animals shows an alliance with these survivals of the former races of the New World. Hence it seems reasonable to believe that a time will come, though in the very distant future, when even these remnants of the ancient fauna shall have passed away — and the then living animal occupants of the Americas shall have approached very nearly the forms of the animals now inhabiting Europe. Though what effect the more complete occupancy of the globe by man will have upon the lower animals is a serious question, unless his passion for destruction shall be moderated.

CHAPTER XX.

THE GRAY RABBIT.—BUNNIE'S BIOGRAPHY.



BIT of odd yet attractive innocence is the wild rabbit of Europe. I can hardly say as much for its descendant, that piebald and lop-eared pet of my boyhood; for though a very little boy at the time, I still remember my first pair of pet rabbits. So high their strain, they had become mere animal dudes. The one mark for admiration was their preposterously long ears,—so long that the animals could not hold them up. They were so dainty and delicate that every strong point of the wild stock had been pampered out of them. In fact they had become unnatural in every way.

That present of a pair of fancy rabbits proved an interesting event in my young life. It quickened my natural sympathy with animals in that I had become an owner of living things. This imposed the responsibility of their care, and awoke in me new energies. I must set to work to make them a hutch,—not a small draft this on my invention; for material was limited and very hard to get, and tools were few. Hence some of the sterling virtues of the boy were severely taxed. But success rewarded endeavor. The

hutch was finished; and with pride I put my rabbits in their new home which my own hands had built.

Now came a sense of real care, for every day I must provide their food. Quite often the refuse of the garden failed. I then had to scour the meadows, and the green banks of the roadsides. I soon learned that my Bunnies were real epicures in their own way. They were very fond of lettuce, and I observed that if a leaf or stem of an old plant was broken a white milk exuded. I found this to be true of other plants, dandelions, sow-thistles, milkweed, etc. I afterwards learned, without knowing the meaning of the word, that *Lactuca* (milky) was the botanical name of the lettuce and some of my wild plants. In fact, I was unconsciously becoming a botanist; for I wondered if one of my wild plants was not a wild lettuce, which years afterwards I was able to determine for myself.

I was "getting troublesome" to the older folks, who would answer my questions with a "Pooh! pooh!" and an assurance that there was no lettuce about it. How could there be, seeing it was only a weed? Despite the judgment of his betters, the "queer boy" was learning some profound things about his pets, and even of wild plants.

It puzzled me to find, on actually tasting it, that this milky fluid was intensely bitter; and yet my rabbits were inordinately fond of such plants as contained it. I happened to find in a book that this white fluid contained opium; but I had heard that opium was a poison. Now as the Bunnies were thriving and actually fat, I was impelled to ask my

superiors for light, and was answered impatiently: "Yes! yes! master inquisitive! to be sure opium is a poison; but don't you know that what's one man's meat's another man's poison?"

My pets grew finely, and the doe to my delight began preparing for family cares. To get a lining for the nest she seemed to me bent on denuding herself of fur. With what anxiety I watched them day by day! I really became partial,—even putting the nicest leaves to the doe, and pushing the buck aside while she ate them.

One morning I found that four little ones had come. Almost screaming with delight, I ran back to the house to tell the folks, and then I returned to the hutch. But I soon found that all the maternal tenderness had been exhausted in preparing the soft nest for the young. And once the young rabbits were born, the parents became the most cruel and unnatural of ogres.

Rabbit Intelligence.

The domesticated rabbit gains next to nothing intellectually over its wild ancestor, but becomes emotionally unnatural, if not pathologically unsound. At the best, under domestication, the rabbit, like the guinea-pig, *Cavia cobaia*, with its rabbit-like head and face, gets simply coddled into a stupid harmlessness. And for all its misleading name, the guinea-pig is a rodent the same as the rabbit.

We have heard of the "learned pig," which played cards, told fortunes, and did other such wonder-breed-

ing things. So it is not incredible that even the stupid rabbit has been taught some strange tricks. An old showman has exhibited an educated hare, one that could beat with its toes on a drum. In a spurt of temper, the animal has a way of rapidly beating on the back the object that offends it. This habit the mountebank had turned to his advantage.

Because of its general harmlessness and abundance this animal often serves the purpose of experiments in surgery, and in this connection the following account of a real prodigy among rabbits is vouched for as a truthful story: —

"A rabbit — one of the ordinary species — was bought for purposes of experiment at the physiological laboratory in Paris, and, after a portion of the facial nerve had been removed, it was left to run about the laboratory. It very soon recovered from the effect of the operation, and was for four years M. Laborde's affectionate companion. It would await at the top of the stairs his arrival in the morning, and would sometimes run to meet him. Whenever it had the opportunity the rabbit would jump upon his knee, and was as fond of caresses as a cat. During the progress of an experiment it would sit on the operating table watching the proceedings with every appearance of interest. Bunnie's chief delight, however, was in a microscopical examination. As soon as M. Laborde put his eye to the microscope the rabbit would perch on his shoulders and endeavor to take a peep. This wonderful animal lived on terms of the most affectionate friendship with two dogs belonging to the labora-

tory; but when a strange dog arrived he invariably turned it out, and sometimes chased it along the street. Nor did he show himself very friendly to unfamiliar biped visitors."

Here is an innocent animal with a scientific reputation, — the assistant and companion of a savant of celebrity. In a word, the little thing is chronicled as a rodent of renown. It would be grand if one could analyze the head-work of that little fellow. But prying into a Bunnie's noddle is not an easy task. However, let us imagine an hysterical patient squirming and squealing under an operation, and Bunnie looking on, and thinking to herself: "What a fuss! I've been there myself, and didn't mind it much!"

In its wild state, dwelling in communities, with a living to get, and many foes to shun, the wild rabbit has sharpened wits and many entertaining ways. I have seen them in their warrens abroad, and a rollicking abandon is their early morning frolic. Then all of a sudden comes a still, serious watchfulness, a oneness of circumspection, the whole camp mounting guard; for sitting on his hinder parts, every individual is on the alert. It is light and shade, Milesian merriment topping off with a bit of a row. All Bunnie's best strokes are hindward. He will face a friend, then frisk around, and get in his points in a sort of back-handed way, and with a celerity that precludes anticipation.

Let one get his temper up, and he will stamp the ground in pettish and angry demonstration. All this has in it a spice of high-class nature; for I have seen

chimpanzee do the same thing, — yes, and coming higher even to the "paragon of animals," how many of my readers have recollections of a similar terrorism. So this animal pantomime of "stamping out" is very human in appearance at least.

Though not without cunning, if a ferret invade its domicile it is all up with Bunnie. It will make a feeble effort to escape, and perhaps at fight. But the poor thing knows that it is doomed, and with a cry pitiful and baby-like it gives up. It sometimes, however, proves equal to the occasion, and brings its foe to grief; for a terrier dog has been known to squeeze itself into the burrow, when Cony, returning to find his domicile entered, has with great energy closed up the entrance, thus burying alive the invader of his home.

And this mention of a "burrow" itself tells the story. The American Gray Rabbit is not a burrower, but the English rabbit is. Hence its name, *Lepus cuniculus*. In England I once went through a rabbit warren, or place where rabbits were raised for the market supply. The pretty creatures, on our entering their domain, stood up on their hind-feet, and looked at us with their large lustrous eyes, keeping their great ears erect to catch every sound. Then upon the least movement that we made, they would disappear as if they had sunk into the earth. In fact, the ground was honey-combed, like a place occupied by prairie-dogs.

But all this is writing about real rabbits, which is not my main purpose. Perhaps the following

occurrence may set the subject in a proper light: A friend had procured a farm-hand at the immigrant depot at Castle Garden, New York. He brought him most of the way by steamboat, then took him in his own vehicle to the farm, some five miles further. William was intelligent and made sensible remarks on the new scenes through which he was riding.

It was not long before the man made the acquaintance of our gray rabbit, one which had been caught without harm in a trap. Attempting to toy with it, he received on his hand a smart blow from both hind-feet of the affrighted little prisoner, which inflicted quite a scratch, on which he exclaimed: "Sure, Master, but I should never take it for a rabbit. At home we would call it a young hare."

William was right. The gray rabbit is a hare, whose true technical name is *Lepus sylvaticus;* and our sketch, thus far, is applicable only to the true European rabbit, *Lepus cuniculus,* whose trivial or specific name denotes a miner or burrower, which our gray rabbit is not.

The word rabbit, then, simply denotes a particular species of the genus *Lepus,* of which the word *hare* is the generic expression in the English and some of the continental languages. Though possessing several species of hare, America does not include the true Old World rabbit. Passing by certain real distinctions of form, let us notice some striking differences of habit. The cony is a true burrower, and lives in communities. The hare is solitary, and as a rule does not burrow, though sometimes found occupy-

ing an abandoned burrow of some other animal, like the so-called burrowing-owl, *Athene cunicularia*, which occupies the deserted burrows of the prairie-dog, *Cynomys ludovicianus*, and sometimes by trespass sharing occupancy with the living owners. Then the rabbit, like the guinea-pig, brings forth its little ones full-haired and open-eyed; but the young hare comes into being nearly naked and quite blind, altogether a very helpless thing. However, the popular voice has fairly got the start of science in this matter, and as the "gray rabbit" it will be always known.

Molly Cotton-Tail.

But I think it will interest my readers to be told how little Molly Cotton-tail got her scientific name. The truth is the systematists got things so badly mixed that not until recently did this very common animal have a scientific name of its own. Peter Kalm, the Swedish botanist, for whom Linne named our beautiful Kalmia, published at Stockholm his *Travels in North America*, 3 vols. 1753–61. This is the earliest book containing any allusion to the little hare, and it is referred to as inhabiting New Jersey.

But the first carefully worked-out diagnosis of the species was made by John David Schoepf, who in 1783 wrote an accurate scientific description of it in New York, which he published the year following in Germany. What is strange and unfortunate, he did not give it a systematic name, but simply called

it, "Der Nord-Americanische Haase," "The North-American Hare," and some of the systematists jumped at the conclusion that by "North American Hare" the savant meant *Lepus Americanus.*

It was some sixty years afterwards when Professor Baird translated Schoepf's description, and said: "It is not a little remarkable that this, one of the best known animals of North America, should not have received a distinct scientific name until 1837, when Dr. Bachman gave it the name *Lepus sylvaticus*, the wood-hare. Other scientists had worked on the case, but, in fatal confusion, had mistaken the individual. Schreber, in 1792, named it *Lepus nana*, dwarf hare, — a good name, but his description applied to another hare. So it fell out that the only christening the little fellow got was received of Rev. John Bachman, a collaborator of Audubon." In what follows the words hare and rabbit will be used interchangeably.

The hare of Europe, unlike other wild animals and even their rabbits, never gets fat, and this no matter how good may be its feeding grounds. Our wood hare does sometimes get quite fat, although it never makes "kidney fat." But if during a hard winter it has been a long time confined to its form, the condition of the animal becomes extremely bad.

But hares are often the subject of an epidemic. In his monograph on the *Leporidæ*, that is, the hare family, says J. A. Allen: "In the case of our little wood hare (*L. sylvaticus*), I have repeatedly met with their dead bodies in the woods and thickets, bearing no marks of a violent death, and have noted the

scarcity of these animals during the years immediately following." The Indians declare that the hares as a food supply are sometimes seriously reduced by disease.

Mr. Allen cites Dr. J. G. Cooper, in the *American Naturalist*, who says of a certain species: "Their numbers seem never to have increased much north of the Columbia and Snake rivers since the epidemic (small-pox) destroyed them some years since; but north of these rivers they became common." It is too pitiful that little Bunnie must be subject in so literal a sense to the ills that human flesh is heir to.

The gray rabbit has one form or bed to which he adheres with a cat-like attachment, the runway to which may sometimes be easily traced because of the animal's frequent going to and fro; and when alarmed this favorite form is his place of retreat from the sportsman or the dogs. But when pursued he does not make for this asylum directly; in fact he runs with high speed for a considerable distance from the form; and having drawn the dogs away, will then run at a right angle from the course just made; then turn about, and with the highest speed possible make straight for his home.

These tactics the sportsman calls "doubling," and as he knows this trick of the rabbit, if also he happens to know where the favorite form is, Bunnie has a poor show, for if the gunner stations himself near this place the game retreating homeward becomes an easy prey.

A hunter told me when praising his hound, that

by its bark he has distinguished the doubling at half a mile distant, and shot the rabbit at his return; but that an old rabbit, if you miss him, will avoid his "favorite bed," and by making for some other one may give you trouble to get him.

We have seen that the raccoon by a sort of foresight locates for himself several "bed nests," one as the favorite place and the others as temporary retreats when pressed by danger. It is similar with our little hare.

An old rabbit usually has a series of forms at distances of thirty or forty yards from the favorite one. These supplemental forms he uses for comfort's sake, and for strategic purposes. For his comfort he dislikes to face the wind, and when in repose keeps his back to windward. With the change of wind he will change the form for one looking leeward. The animal also makes changes for purposes of strategy. A change may be made upon suspicion of danger; or he may be circumvented when away from his favorite form. Though if the danger be imminent, he usually has some hole in the ground or place under or behind a log, or in a brush-heap, into which he at once retreats. If not taken too suddenly, there is a good deal of intelligence in his methods of flight, as well as in his temporary change of domicile.

CHAPTER XXI.

THE GRAY RABBIT—CONTINUED.

Rabbit Tracks.

THERE are some facts so interesting in the running of rabbits, that they deserve to be given with a little detail. They do not connect their forms by their tracks, but take prodigious leaps, clearing at a bound from fifteen to twenty feet, and the zig-zags and doublings are well suited to deceive. A curious feature of their tracks might delude the unwary into the belief that they were made by two, and directed backwards. The hare is virtually a plantigrade, and this leaping is done with the hind legs, much like that of the kangaroo. Upon the light snow or on the soft ground the spoor, or trail, of a rabbit in full jump comprises two dissimilar pairs of imprints; a pair of small toe-tracks inside and a pair of large, full foot-tracks outside. The series is the impression of successive leaps, which are made in the following way.

The two little front feet or hands are put pretty close together, while the hind feet are set somewhat widely apart. The fore-feet are then raised from the ground,

and the body by the same act is thrown back so as to bring the entire weight upon the firmly planted hind-feet, in which, and in the thighs, and on the back the muscles are powerful, hence comes the tremendous spring. In alighting the forward feet, nearly close together, touch the ground first; then come down the hinder feet, striking outside and forward of the front feet. Thus is made a double track, the large and wide pair of tracks outside and forward of the small one, like the kangaroo's track, with this singular difference, the latter makes his double tracks walking, for when leaping the fore feet do not touch the ground.

These peculiarities of rabbit tracks were noticed by that delightful naturalist, Robert Kennicott, in 1857, who says: "In making the longest leaps the fore-feet strike in a line, one behind the other, and at some distance in the rear of the hind ones, as if they had been again raised before the latter had touched the surface." It is noticeable that when in quest of food on the snow, their tracks are made of leaps about four feet long.

The strategic tact and knowingness of the wild rabbit was well understood by the plantation negroes, who held the little fellow in an affection of a gustatory kind. The upper side of the rabbit's tail is brown, but it has a persistence in showing the under side, which is like a toilet puff, cottony white. The tail being ordinarily carried erect, looks like a tuft of pure clean cotton, or a fresh opened cotton-boll, hence its familiar name among the negroes, — "little cotton

tail." Uncle Remus, though partial, always gets fraternal when on this subject, and makes the cunning of "brer rabbit" circumvent the slyness of "brer fox."

The thrifty house dame, who has a way of "culling simples" for her cuisine and leech-craft, feels badly hurt when the spring discloses the fact that of her savory pot-herbs the finest tussock has been used by a rabbit as a form through the winter, and the whole middle of it has been killed by the heat of the occupant's body. In a friend's garden a large mat of thyme was thus nearly ruined. Who has not heard of improvident humans eating themselves out of house and home? What self-possession and decorous restraint in this our little solitaire. However pinching the winter's cold and scarce the food, Cony restrains his appetite, keeping a wise care of his covert from the storm.

In some things certainly the gray rabbit is quite particular, and sometimes too much so for its own good. So inquisitive is he of small things on the way, that when in full retreat before the dog, the whistle of the hunter to stop the hound will sometimes stop the rabbit also. Even the clicking when setting the hammer of the gun will check the poor dazed thing in his flight, for he stops to know what the unusual sound is. True the pause is only for an instant, but that is enough for the sportsman's aim.

In the woods the rabbit will course through the underbrush, then, after making a tremendous leap at right angles, will double his track. These movements he will vary with zig-zags, greatly bothering the hounds; not seeming to look for a hole unless he be closely

pressed, and a hollow tree offers an illusive asylum. In cleared land he makes for a known hiding-place. And generally he knows all the good spots in a wide territory.

A friend of mine, an intelligent farmer, tells me that once after a heavy fall of snow he marked a rabbit trail at considerable distance from the house. It led in a straight line to the hennery, in which the game was found, having sought this shelter from the cold. From the directness of the trail it was evident that the animal had full knowledge of this retreat. My friend also told me too of an old buck which he had often tried to take, but which would either by a direct or circuitous route retreat to a deserted marmot's or woodchuck's hole, which he had long occupied.

Two distinct kinds of tracks have been mentioned, — that which is made in retreat and that which is made when foraging. To these a third must be added having two sets of imprints, in lines close and parallel to each other, and the step-marks at very short distances. These are the courting-tracks. At the turn of midwinter, or about the beginning of February, the male looks up his mate or mates. At this time prudence is wanting; hence, less cautious than usual, they fall into some indiscretions which imperil their safety. In truth, it is with these simple folks much as it is with some thought to be wiser.

If the snow on the ground be soft, these double-tracks, or courting ways, betray what is going on, and sometimes the nearness of the lovers. Our rabbit likes a bit of play in the evening twilight and the

early morning dawn, hence he has been called a crepuscular animal. But he is essentially nocturnal, like the rodents generally; and the evening and the morning are the wooing day. The doe has much to pull through. If the season proves favorable, three and four litters are to be raised ere the next winter comes. The rabbit, like many other rodents, is noted for its numerous progeny.

As to the breeding habits of the wood-hare, these must surely have undergone a change in the well-populated places east. A thorough hunter tells me he has never found a nest in the woods, nor even a very young rabbit there; that for breeding they prefer the cleared land. In ploughing up old grass-land in spring, the ploughshare sometimes turns out the litter. This choice of the meadow has to do with food, and secures an open lookout and guards against surprise.

But the breeding-nest of the gray rabbit is a very simple affair. A hole scratched sloping downward into the ground about eighteen inches. The slope is slight, so that the nest is very near the surface. It has a bed made of dry leaves and grass, and on top some fur or hair which the mother has torn from her own breast. The litter numbers from four to six. So small is the hole that the mother cannot nestle in it with her young, but she suckles them at the front or entrance, where she adjusts herself, lying on her side, against the hole. Thus positioned she then by a sort of *wuzzling*, not *purring*, sound, calls the little ones, the call being at once obeyed. The

maternal brooding and fondling which impart so much comfort to the mother's care are unknown to our Gray Rabbit. During the suckling period she occupies a slight depression in the ground a few yards off, from which the motherly watch is kept over her charge.

I think she can give the alarm to her little ones, for they will stay well back in their nest, and keep very quiet in time of danger, while the mother will endeavor to divert an enemy from her form.

But despite these vigils, something may happen to bring the tenderlings to grief. Should they escape preying animals, — for the mother is courageous in defence, — yet the sloping nature of the nest invites the rain, and a storm may drown the whole litter. Then the shallowness of the nest is such that the plough has often turned up all to perish in the cold winds of March. Should all go well, three weeks of suckling will suffice, when they become so large as to crowd each other. Now the mother sets them adrift.

Some Model Hares.

As already hinted, the male of *Lepus sylvaticus* gives himself no concern about the little ones. But, lest all father hares be set down as depraved, I shall instance a pretty exception, even should the story seem to some as past belief.

In the months of May and June, 1860, Professor F. V. Hayden and his party of United States explorers found themselves up in the Alpine snows of the Wind River

mountains, where they were detained several days in an attempt to feel their way to the Yellowstone. On the 31st of May, Dr. Hayden declared that a new species of hare was around, as he had observed unusually large hare tracks in the snow. As the Doctor expressed himself to us: "The tracks were very large, the feet being wide-spread, and the hair thick between the toes, thus really furnishing the animal with snow-shoes." In June one was captured, and the Doctor named the species *Lepus Bairdii*,(Baird's hare,)after the able Secretary of the Smithsonian Institution.

The animal seemed limited to that small Alpine territory. But one specimen was secured, and no more was heard of this hare until 1872, when Dr. Hayden and his party of scientific explorers were again in that region, at a time which gave better opportunity, as it was in the months of August and September. At this time five specimens were obtained by Mr. C. Hart Merriam, the naturalist to the Hayden Survey. Four of these were adult males, and they had all been suckling their young, — an astonishing fact.

"This hare is doubtless an Alpine form," says Allen, "inhabiting the snowy summits of the high portions of the Rocky Mountains." It has been found as far south as New Mexico. Whether arranged for the season of flowers or that of snow, this mountain hare disports a gayer outfit than our little gray rabbit. In winter its entire dress is white; but in summer the pelage generally is dark plumbeous, like that of the house-mouse, or nearly like our Maltese pet.

"The feet are wholly white." If not in exquisite taste, it certainly is peculiar, — for white satin shoes can hardly look well on large splay feet. But they don't show to disadvantage on the snowy carpets of its high Alpine home.

It is a pity that as yet almost nothing has been learned of the female. We would like to know her ways. Is she a slattern, and so imposes on her kind mate, who takes hold of all the household affairs, that things may not hang by the ears?

Curiosity is piqued even to the desire of prying into the private affairs of this Baird's hare.

Surely this Whitefoot should be written up as the model paterfamilias of the Hare family.

CHAPTER XXII.

THE GRAY RABBIT — CONCLUDED.

Rabbit Traits.

THE striking out of the hind limbs of an adult rabbit, with the claws distended, has often proved more than a match for a cat. And little wonder that these extremities, with their armament of sharp nails, should be quite effective, when we recall that grand out-fit of muscles which enables them to make such prodigious leaps. When taken by the hand the captured rabbit, at first, in his terror, utters a plaintive but musical cry; it is not properly a squeak; and after a few impotent struggles he is dazed into a passive submission. Thus an adult gray rabbit may be carried lying full length on one's arm, the front toes being loosely held between the fingers, although he has been taken but five minutes from the trap. After a little show of resistance he has submitted to the situation.

Once when riding with my daughter we came upon a gorgeous patch of the purple lupine, *Lupinus perennis*, by the roadside. I stopped to gather some, when a young rabbit sprang out of the glowing bed of purple

bloom. He dashed into a heap of brush near by, which enabled me to capture him without inflicting injury. I bore my pretty prize to the carriage, and put the little captive in my daughter's lap, where he lay making no resistance. But though uttered only for a few moments, that plaintive whistle in the minor key, so flute-like and so pitiful, kept piping in our ears. Our hearts misgave us. My daughter pled for the little prisoner's release; that decided the matter. I bore him gently back to the bed of lupines, where he easily hid himself, and like a helpless little prince was safe under the royal purple.

This almost non-resistant quality of the gray rabbit, has given me a liking for him. It is your pampered tame one that excels in the mulish accomplishment of kicking at his master. But when "striking out" becomes a virtue, the mother gray-back has been known to shine. I will instance an example of mulishness, and one of heroism; and for a chronic kicker my illustration shall be drawn from a statement of Professor Holder, who regards rabbits and hares as delightful pets, whose habits and ways yield a source of pleasant study.

"Some years ago I went to a small coral island in the tropics, and as we expected to remain five or six years, we took everything we could think of that would be needed, and last, but not least, a pair of fine rabbits; one, Jack, a full-bred English "lop-ear," and Bess, a demure, soft-eyed, straight-eared American, and it would be hard to find two more opposite characters. Old Jack was a sturdy Briton,

indeed; a rabbit in appearance, but a bull-dog in nature, and no watch-dog was required when he was about the yard. Man or beast, all were his enemies, and nothing ever dismayed him, if I may except a big hermit-crab that one day took a strong hold of Jack's long ear and caused him to dash about the place frantic with pain and terror."

It seems that pugnacity was Jack's besetting sin, that he was all the time "mad as a March hare," and that as a belligerent there was "method in his madness."

"His mode of attack was in one respect honorable; that is, he always warned people off before making his assault, but then look out! The warning consisted of several loud stamps with his powerful hind feet, and the next moment the intruder would see a black-and-white ball with flapping ears coming at him with the speed of the wind. Flight was the only resource, and visitors who had come in by the gate went out over the fence, often with Jack hanging to the leg of their trowsers, where he would cling until three or four feet from the ground; then drop off, and stand on his hind legs and eye the discomfited victim through the fence. And woe to one's clothes if Jack caught you; for he always, as I can speak from experience, seized the trowsers just at the ankles with his teeth, and clinging firmly, scratched with might and main with his strong-clawed hind-feet — a proceeding that soon rendered the garment worthless, literally tearing it in shreds.

"For a long time, while quarters were being built,

we kept them in our yard, where the soil was nothing but pure coral sand mixed with pieces of broken shells, and it was laughable to watch Jack's attempts at burrowing, and with what astonishment they backed out of the holes that caved in upon them. They evidently thought it a poor country for rabbits, for their burrows were complete failures, the sand falling in immediately."

The courage shown in Lop-ear's conduct was funny in its sheer impudence. How much finer both in motive and action was the following output of maternal impulse! For real "fancy sparring" only a deer could equal the deft hitting of that mother grayback, who fought a huge black snake, to rescue her young one. The reptile was rapidly bearing it away. A little low cry, though at quite a distance, was heard by the mother-hare, for the sense of hearing is marvelously keen. A few desperate leaps and she had caught up and joined issue with her dreadful foe. The snake dropped its prey, its sulphurous eyes glowed in luminous rage, and it sprang. But the heroic mother leaped into the air, making a curve over her enemy, and just at passing the middle of this arc putting in most deftly a double shot behind, which sent the serpent rolling and squirming in the dust. This feat was several times repeated, the snake darting and snapping wildly, until its mouth was filled with hair, without inflicting any real hurt on the little heroine. The reptile was cowering fast and would fain slink away; but the witness of this fierce battle now came to the rabbit's

aid. The black reptile was soon destroyed, and the brave mother rabbit left to her little one.

But such hitting implies great strength in the hind limbs. And not unlike the kangaroo, the hares are in this particular very strong. Dr. Shufeldt had opportunity to measure the leaps at their best of the large Mexican hare and our gray rabbit on the prairie when sprinkled with snow. When at leisure the leaps of the large hare would be about four feet, and those of the small one a little over two feet. But when impelled by terror, the Mexican hare will clear thirteen feet at a bound, and our wood-hare seven feet. But the strength of limb to sustain such leaping is enormous.

The pine snake is a destroyer of rabbits, particularly the young. The mink and the weasel are especially feared by the wild rabbit. In Europe the ferret is used to hunt rabbits. If our common weasel appears in a neighborhood, the rabbits will soon be exterminated for a considerable area.

West of the Mississippi the notable enemy of the hares is generally the prairie-wolf, or Coyote (pronounced Ki-ó-ty). Above all animals the coyote is the enemy of the jack rabbit, and used to keep its numbers down. But some years ago a bounty was put on the coyote in California, and where this bounty was operative he has since decreased and the jack-rabbit increased, until now the latter does great damage to vineyards and orchards. It is, therefore, proposed to take the bounty off the coyote and put it on the jack-rabbit.

It may be said here that there is an animal economy which may be interfered with by unwise legislation, — even to serious results; for faunal disturbances, when they destroy the balance set by Nature, must issue in a disaster, whose remedy is in a re-adjustment, or restoration of the balance.

In the winter the gray rabbit is very destructive to young trees, and is the dread of the nurseryman, although some mischief laid to him is fairly chargeable to the field-mice, which in winter will bark trees both below and above the snow line. The rabbit will girdle young trees, and will not only bark the very small trees of the nursery, but will cut off the branches within reach and eat them. I have in mind a nurseryman who had not yet learned this fact, and would not permit a gray rabbit to be in any way molested on his premises. The tender-hearted man soon woke up to his mistake. The animals became emboldened and took possession, and very soon many thousands of young trees were utterly ruined. At last, in dismay, he besought the help of his neighbors, and a war of extermination was proclaimed.

A Rabbit Recluse.

A good many animals can learn — that is, take in the situation. I have a farmer friend in whose hospitable home I spend at least one day and night in the year. At each visit I ask with honest concern, "How is Old Cotton Tail?" The farm-house is on the skirt of an old village. It has ample surround-

ings, outhouses, and an excellent garden, too, with vegetables and pot-herbs, a feature but poorly represented on some farms.

About the opening of winter each year a friend from Philadelphia makes a visit to the same good farmer, under the expectation of being specially regaled with rabbit-pie. With his dog my friend gets the game on his own farm. He never takes a gun, — he is so good a shot that a pocket pistol is sufficient. As he goes out and returns to the house he is likely to pass one rabbit which neither he nor his dog will disturb. This is Old Cotton Tail. He has the freedom of the manor — and the animal seems to know it too; for he takes in the full measure of his privilege, and does not abuse it.

This license the old rabbit has enjoyed for several years. He knows every foot of the farm, and every hole or possible hiding-place, not that he needs any such as against the farmer, or old Cæsar, who would not touch a hair of his pelt — but occasionally, a strange dog comes on marauding purpose bent, when Old Cotton Tail modestly withdraws from society.

With good weather he is given to spurts of high spirit, and will then nose familiarly at the old dog. The house cat basking in the sun does not encourage his approaches, and will even spit out intensified disgust on receiving one of Old Cotton Tail's back thrusts.

I have said that this rabbit had several forms, or resting-places. He has a great liking for a bed of thyme in the garden. His bodily heat has so bared

a spot in the middle, that it is really a fragrant little evergreen bower, and so a gem of a retreat. But he has safer places under the barn, and the hen house. Between fowl and beast he finds in winter a generous picking, hence faring well Old Cotton Tail is always in prime condition. Appearances indicate that the old rabbit has degenerated into a sort of barn-yard appurtenance, as one that has lost all sentiment for his own folks. To him, "the merry spring-time" is a myth. The common allegation, "mad as a March hare," does not apply to him. He is a model of sobriety, — a confirmed recluse the whole year round.

This exceptional exclusiveness among the lower creatures is an interesting question. Every effect has its cause, and there are churls among the animals as well as among men. There is the rogue elephant, the morose fellow who is driven from his herd; and such is true of the monkeys, — and even Coati-Mondi can become an outcast. But this sort of exile is not voluntary. So we may never know why Old Cotton Tail became a recluse; if of his own seeking, he was a queer fellow surely.

Thoreau's Rabbits.

All this is curiously suggestive, for it brings up the past like a dream. Thoreau, that idolator of Nature, to whom the birds would come, and even the snakes, and the little beasts, as if they thought him their friend, writes as follows of our little gray rabbit: —

"The hares were very familiar. One had her form

under my house all winter, separated from me only by the flooring, and she startled me each morning by her hasty departure when I began to stir,— thump, thump, thump, striking her head against the floor timbers in her hurry. They used to come round my door at dark to nibble the potato parings which I had thrown out, and were so nearly the color of the ground, that they could hardly be distinguished when still. Sometimes in the twilight I alternately lost and discovered sight of one sitting motionless under my window. When I opened my door in the evening, off they would go with a squeak and a bounce. Near at hand they only excited my pity.

"One evening one sat by my door, two paces from me, at first trembling with fear, yet unwilling to move; a poor, wee thing, lean and bony, with ragged ears and sharp nose, scant tail, and slender paws. It looked as if Nature no longer contained the breed of nobler blood, but stood on her last toes. Its large eyes appeared young and unhealthy, almost dropsical. I took a step, and lo, away it scud with an elastic spring over the snow crust, straightening its body, and its limbs into graceful length, and soon put the forest between me and itself, — the wild free venison, asserting its vigor and the dignity of Nature."

The closing sentence above is like the sudden veering of a contrary wind — still this trick of rhetoric hardly condones the heresy that precedes. The quality of wisdom is not strained; but these philosophical impressionists become mental illusionists. What an eyesight is that which sees in a poor old hare the

bankruptcy of Nature, — his own dear goddess *in extremis*, "standing on her last toes." Does not a well-worn angel certify the nobler coin of the realm? If the rhapsodist would see Nature's "nobler breeds," and herself standing firm-footed amid her own beauties, it would suffice to leave Walden Pond to see as I have seen, the merry antics of little Cotton Tail on a carpet of emerald, or the daisy-dotted sward of a Monmouth meadow.

Rabbit Lore.

But the thought of one mind seems to engender thought in another; and this digression has put me in a thinking vein, though a fair discussion of the personal history of our little gray rabbit would indeed be delving into deep doctrine.

Could it be got at, the ancient lore touching the ancestry of *Lepus sylvaticus*, would be well worth telling. Even before human history began, though numerous, the conies were always "a feeble folk," and fair game for all animals carnivorously inclined. In classic Greek we find a word meaning "killing of hares," and the word hare is also a synonym for *coward*. And as for the poor fellow who was harried or hen-pecked, their philosopher Posidonius would say, "He led a hare's life." And this curt expression doubtless the gouty old Stoic borrowed as a bit of folk-lore, or a proverb of the people.

If remoteness of origin may count for much, the ancestry of the hares is extremely ancient. I am

interested in a small fossil bone now lying on my table. It was given me by Professor Marsh who obtained it from the Dakota Miocene. It is part of the left side of the under jaw of a hare. The number is large of these fossil or extinct American hares, for which Professor Leidy raised the genus Palæolagus, "the ancient hare." This jaw is, I think, that of a young individual, my inference being drawn from the sharpness of the teeth. But I dare not conjecture the immense remoteness of that period in which it had to fulfill its mission as a prolific food provider for the numerous and terrible beasts of prey then existing. Truly, "leading a hare's life" then was a pitiful rôle put upon these little creatures. And they are now, as we have seen in the West, food for wolves as well as men.

It must be, I think, that Palæolagus, the ancient hare was large-eared, and clear-eyed. His one chief endowment was circumspection. Such the exposure of the timid little beast that when he went out to browse, or graze, he surely deserved the possession of large gustatorial enjoyment to make amends for this need of incessant watchfulness. But I feel certain that in some way Nature did compensate him for so harsh an environment.

Probably the life conditions of the Leporidæ or hare family have improved since the Miocene times. My fragment has the five molars so strongly set, and yet so small, that the owner surely was a smaller animal than our gray rabbit, himself so small among those to which he is germane, as to merit the epithet familiar

to naturalists—"the little wood hare." I think the ancient could not achieve the deft leaps of the modern. As I see him, the body was shorter and thicker set, and his pug face, could a fancier but imagine the style, would educe from him the fancy name, "chunky chaps."

More Rabbit Traits.

As already seen, the wild rabbit is very prolific; hence he is the only one of our large rodents that in any measure holds his own against the onflow of civilization. And yet his enemies are many. Even the domestic cat will take to the woods and become almost a fera, and subsist largely on young rabbits. For man with dog and gun the pursuit of the rabbit seems to have a fascination. To me the yelping bark of the hound when he has scented the little thing is always distressing. Old rabbit-hunters claim that the three different kinds of sounds distinguishable when different dogs are baying, denote different grades of strain in the hounds. There is the short snappish yelp of the hound of low degree; the whining, yet almost percussive howl which marks the dog of fair and even good points; then there is that long-drawn, deep-mouthed baying which can be heard far away, and denotes the hound of highest strain.

I dislike them all, but this specially exaggerated wolfish cry is to me indescribably dismal. But judgments differ. Doubtless the devotee hears music in the frenzy of the howling dervish. I once knew the father of a necessitous family. He kept one of these

fiendishly accomplished brutes. The man must have had not one ear but two, for music, the one as a pietist in church, the other as an enthusiast afield; for he said to a fellow sport: "In meetin' I have my favorite hymn; but the sound of that hound when he has nosed a rabbit, is to me the sweetest music in the world!"

I am so much pleased with the sight of little gray-back in the apple orchard into which my study windows look, that I feel the desire to caress him as I do my pets. With no dog near he is an interesting object, and the scene is innocent and pretty. In the confidence of safety, he squats, snips off at its base a dandelion leaf, then sits up, and enjoys the crispy dainty. What a picture — ears erect and wide open; and that nibbling or clipping diminution of the leaf, the lips so acting on it, as to make the dainty seem to be creeping like a living salad into the mouth. Then look at those soft staring eyes, and now, that the sweet morsel is finished, that funny winking mug. Is Bunnie smacking his lips? Whatever the meaning of the same, it is a "*bonnie* sight."

Note that habit of circumspection. Poised on his hind-feet, with neck a little stretched, how those lustrous eyes survey the situation, while the ears are set erect and expanded to catch the slightest sound. Ah! he has heard something, and off he goes at almost flying speed, bearing that cottony caudal tuft aloft behind him. If for mere display that white cockade might suggest a spice of vanity in rabbit life. And even if it be the "white feather," who will blame

timidity where every hand is hostile? If a flag of truce, it has never been regarded. Perhaps this carrying the white flag when in full retreat may have a significance of descent, may be a survival of habit, as signaling to others some imminence of danger. Depend upon it, that is what it means. The white flag of the signal-man declares "all right." But this white tail in retreat is a call for circumspection to every one concerned.

This natural suspicion of the hare generally, when overcome, is replaced by an equal confidence. Hence this little animal, in some one of his many forms the world over, is met occasionally with as a pet. In his recent exploration of the Kamschatka River, Dr. Guillemard, the naturalist, describes an interview with an old man who played the rôle of physician over a large region of country in that vast, semi-civilized land. The explorer was the first traveler he had ever seen, and the fact that he too was a physican so affected the old man that he could hardly forbear kissing the learned stranger. Great was his delight when the scientist gave him a lancet, and he insisted that the naturalist should visit his house, where he had a present for him in turn. The traveler's own words are:

"On arriving at the house I found his granddaughter, a pretty little child of five or six years, playing with a young blue hare, which lolloped up in a most confiding way to have his ears scratched. This was the present; but he was evidently such a pet of the little girl that it would have been a crime to have taken him from her."

The old doctor was badly disappointed. What else could he offer the naturalist? He suddenly bethought that he had in his possession a skull which a flood had washed out of an ancient Kamschatdale burying-place. This the savant accepted joyfully. It was a happy interchange; for while the little girl was not deprived of her Bunnie, the cranium became the object of grave discussion by the venerable philosophers of a foreign anthropological society.

This "strange eventful history" of our little wood hare, with some of its relatives, though it almost tempts to an homily, I must forbear.

CHAPTER XXIII.

MICE, MUSICAL AND OTHERWISE.

ABOUT to give my recollections of some mice endowed with the musical faculty, the chief figure in the narrative will be a remarkable pet, a singing mouse, which we called Hespie. It was a *Hesperomys*, the name meaning the Western Mouse, the genus being wholly limited to our Western Continent. The house-mouse is an intruder from the Old World, but Hesperomys is one of our meadow-mice, and its ancestors have possessed the land from the beginning. But this is concerned with what the zoölogist calls "faunal distribution." Hence for a clear understanding of what we are about, a few words seem necessary on the geographical distribution of animal life; or the local range of special forms. Let one example suffice.

A very large family, that is, one containing many species, is the quadrumana, the four-handed beasts or monkeys. Those of the Old World are called the *Simiadæ*, sometimes popularly, the Old-World monkeys. Those in America are known as the *Cebidæ*, or New-World monkeys. And it is quite easy to understand

the most prominent differences upon which these distinctions are based.

The Old-World monkeys have their nostrils so terminal, and so near to each other, as to approach in this respect a closer likeness to man than do American monkeys. And their teeth in kind and number are so similar to those of man as to impart traits more human-like than those of the New World. They have also cheek-pouches, but none of them have prehensile tails. Now the New-World monkeys have their nostrils lateral and sprawling; they have also more teeth than man has; they have no cheek-pouches, and many of them have prehensile tails of such service as to be called a fifth hand.

But does this law of distribution affect even "mice and such small deer"? It certainly does. A very large order is that of the Rodents, or Gnawers, embracing the hares and rabbits, as we have seen. It contains several well-marked families, and some six hundred species. One of these families is known as the *Muridæ*, in which are found the rats and mice, and their immediate allies. Now it is interesting to know that these Muridæ, or mice, just as distinctly as do the Quadrumana, or monkeys, divide naturally into geographical groups: the one called *Mures* or Old-World mice, and the other known as the *Sigmadontes*, or New-World mice.

And these distinctions, as with the monkeys, are founded on real differences in anatomical structure. It must suffice to mention the teeth as perhaps the most striking. The Mures, or the Old-World rats and

mice, have large, broad molars, and these molar teeth of the upper jaw have each three tubercles. The Sigmadontes, or New-World rats and mice, have narrow molars, and those in the upper jaw have two tubercles. The word *sigmadont* means sigma-toothed, from a marking on the enamel resembling the Greek letter Σ, *sigma*, which corresponds to our letter S.

This fact, then, is now plain: the rat and the mouse which infest our dwellings are of stock escaped from ships from the Old World. The White-footed Mouse, or Hesperomys, is indigenous to this Western World.

It is now a good many years ago that the *London Charivari*, or "Punch," shot its shafts of ridicule at a singing-mouse on exhibition in the great metropolis. It even got up a picture and description of a "singing oyster," in which the mollusk sat on the half-shell looking weakly comical, as if intended to illustrate Sheridan's saying, "An oyster may be crossed in love." The fun in the cut was not exalted. Still it raised a laugh, and so was cutting, and that was enough for the purpose intended.

Thus put upon the scent, the popular firm of Pooh, Pshaw, & Co., whose merciless power is alike feared by philosopher and peasant, "went for" the showman and his "phenomenon."

Nevertheless, I am bold to declare my knowledge of the existence of singing mice of the domestic sort; and further, the belief that they are not very uncommon. But I now propose to introduce to my reader an aristocratic candidate for their consideration, — a musical Wood Mouse, or Hesperomys.

The Story of Hespie.

It was in the spring of 1871 that a friend brought me a mouse which he had captured in his winter residence near St. Augustine, Florida. He told me that for a number of nights a low sound of a more or less musical nature had been heard proceeding, as was supposed, from the chimney, and which very naturally was attributed to the chimney swallow. One day a small mouse came from under the hearth into the middle of the floor of the sitting-room, sat up, and sang for about a minute, and retired. This explained the mystery. Its nightly music and its daily visit were continued, the visit being almost invariably limited to the same small area of the floor. It was determined to capture the strange visitor; which, after many unsuccessful efforts, was finally accomplished.

At last the interesting little fellow was very kindly passed into my custody. My first concern was to add to its comfort by enlarging its cage, also to provide for it in every possible way a condition of things suited to its nature. For all this I was amply rewarded in the fine health and the musical performances that followed.

A little study soon determined that the pretty creature was not a house mouse at all, but belonged to the Hesperomys. This genus is known by the popular names of jumping mouse, wood mouse, and the white-footed mouse. Our specimen was one of the smallest of its own genus, for the precise species is the one known to naturalists as the *Hesperomys cognatus* (Leconte) being

probably a variety of the white-footed mouse, *Hesperomys leucopus*. Singers, after a kind had been known among the house mice, but never among the wood mice.

This fact, so novel, once decided, gave additional zest to my purpose to make her the object of especial study. To give her individuality, as she was fast becoming a pet, I named her Hespie; which name was certainly appropriate. She readily learned to know me, and I soon came to regard her with much attachment. Yet, the truth must be told, — she was a capricious little vixen. The unamiable little miss, though coveting attention, would permit no familiarity, always biting the finger that attempted to touch her. Her animation, agility, and gracefulness of motion were wonderful; one might say, charming. Occasionally a fly would enter the cage, when she would spring at and catch it, sometimes with her mouth, and at others with her hands. Then she would eat it with great relish. So uniformly quick were her motions that on one occasion my little boy said: "Papa, I would like to see mousie *walk* just once."

Her taste was quite omnivorous, although, unlike the domestic mouse, she did not care much for cheese. But meat, bread, corn, nuts, sugar, and even pudding and fish were all acceptable. A little sod of fresh grass and white clover was occasionally put into the cage. This she enjoyed greatly, eating the greens like a rabbit; only always insisting on sitting up to do it.

It was interesting to witness how ready she was for emergencies. Sitting on her hind feet, she would take

hold with her hands of a blade of grass, and begin eating at the tip. The spear would rapidly shorten, and seemingly she must now stoop to finish it, or do it in the ordinary quadrupedal style. Now that was just what she did not choose to do. So when the emergency came, she would stoop down, and in a trice cut the blade off close to the sod, with just one nip; then up again on her feet in a sitting posture, and holding it in her hands very prettily, she would finish it in a comfortable, and becoming way.

On one occasion a worm crept out of the sod, and Hespie at once fell to it, holding the squirming dainty in both hands, and eating away at one end until it was all tucked in.

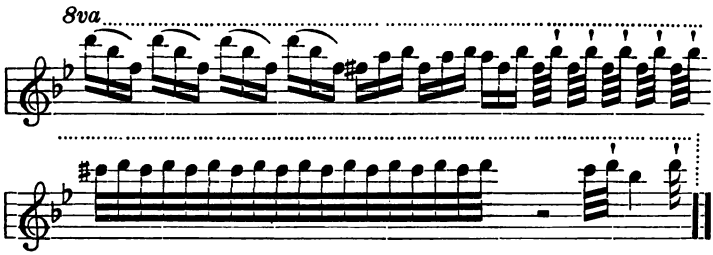
She was very active and fond of play, thus taking a great deal of exercise. This was mostly at night, as unless disturbed, nearly all her sleeping was by day. In truth, it was at night that her peculiar talents appeared to advantage, beginning always at early vespers, when her genius as a singer literally shone. She was often in fine song at night when I was engaged with my pen.

Hesperian Music.

My little musician had several snatches or bits of melody, which were often repeated. But in her *répertoire* were two notable ones, each of which deserves to be dignified as a professional *rôle*. The one more remarkable is the first of the two whose notation is here given; and because it was her favorite, and was

never sung except when she was running in her revolving cage, I have named it *The Wheel Song.**

THE WHEEL SONG.



The last bar of this would frequently be prolonged by repetition twice or even thrice; and she would sometimes change from C sharp and D, to C natural and D, after warbling on these two notes awhile she would wind up with a quick chirp on C sharp and D. The distinctness between the semi-tones was very marked, and easily appreciable to a good ear.
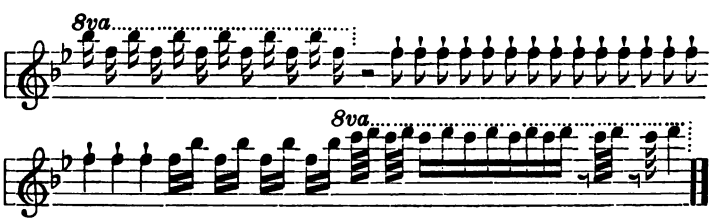
I have always enjoyed the mellow little strains of the song-sparrow and the house-wren. But in either case it was short, and apt to become monotonous from its admitting almost no variation. Monotony was not chargeable to Hespie's Wheel Song. With unconscious skill she worked out of it a wonderful variety. Instead of the first measure she would sometimes open with the second one, then follow it with the first. Or she might start with the third, following with the second, or the first, just as fancy seemed to dictate.

* The musical notation was written by my son, Ferris C. Lockwood.

Then she had her own whims as to the amount of repetition of each bar; that is to say, she would double or even triplicate a measure when the notion took her. In this regard time was ignored. Indeed, whatever may have been the Hesperomys' canon of musical procedure or propriety, I could not but regard it as arbitrary, and beyond my comprehension. Still it must be admitted that this little performer possessed precision, delicacy, and scope of execution, besides her "infinite variety."

She had another rôle, the notation of which was simpler than that of the Wheel Song, yet I think for her its execution was more difficult. It is certain that she was far more chary of its performance; and to me its effects seemed more impressive. I have for this reason, as well as its less frequency distinguished it as *The Grand Rôle.*

THE GRAND RÔLE.



This was seldom given, yet quite often enough to allow it to be written down. The second measure would be sung quite fast, and with no loss of musical timbre, sounding almost like the pecking of a woodpecker on the tree; and at other times it would be

slow like the dropping of water. Although she had no ear for time, yet she would keep to the key of B (two flats), and strictly in a major key.

This fact I considered interesting, as Wood declares his belief, "that the untaught cries of all the lower animals, whether quadrupeds or birds, are in the minor key." Herein theory must yield to observation. If I might venture an opinion, it would be that the music of the really musical wild animals is oftener on a major key; while the minor key characterizes savage man.

A remarkable fact in the above *rôle* is the scope of little Hespie's musical powers. Her soft, clear voice falls an octave with all the precision possible; then at the wind-up, it rises again into a very quick trill on C sharp and D.

Hespie's Grand Opera.

Though it be at the risk of taxing belief, yet I must for her sake record one of Hespie's remarkable performances. She was gamboling in the large compartment of her cage, in a mood indicating intense animal enjoyment, having awakened from a long sleep, and partaken of some favorite food. She burst into a fullness of song very rich in its variety. While running and jumping, she warbled off what I have called her Grand Rôle, then sitting, she went over it again, ringing out the strangest diversity of changes, by an almost whimsical transposition of the bars; a very rhapsodist of art. Then without for an

instant stopping the music, she leapt into the wheel, started it revolving at its highest speed, and went through the Wheel Song in exquisite style, giving several repetitions of it. After this she returned to the large compartment, took up again the Grand Rôle, and put into it some variations of execution which astonished me. One measure I remember was so limpid, silvery, and soft that I said to a lady who was listening, "A canary able to execute that would be worth a hundred dollars."

I occasionally detected what I am utterly unable to explain, a literal dual sound, very like a boy whistling as he draws a stick along the pickets of a fence. So the music went on, as I listened, watch in hand, until actually *nine minutes had elapsed.* Now the wonderful fact is that the rest between the rôles was never more than for a second of time; and during all this singing the muscles could be seen in vigorous action through the entire length of the abdomen. This feat would be impossible to a professional singer; and the nearest to it that I have heard was the singing of a wild mocking-bird in a grove.

For several days the wheel, for want of lubricating, grated on its axle. This afforded Hespie great delight; and her own little warble, always low-voiced, and soft, was completely lost in the louder and harsher sound. It was pretty much as it is with some of the modern methods of praise; as when the singing is subordinated to the instrumental, a mere murmur of vocal song, on which the organist comes down as with the sound

of drowning waters. A drop of oil, and the noise of the friction stopped. This quite excited her temper; and she bit the wires of her wheel most viciously. I have noticed the same with pet squirrels. How like all this is to the delight of a child with the creaking of his hobby-horse, or the nurse's rocking-chair.

A little device was hit upon which at once put Hespie in good humor again. A strip of stout writing paper, a half inch wide, was pinned down in such a way that its clean cut upper edge pressed against the wires of the wheel, making with its revolution a pleasant, purring sound. It was on the principle, exactly, of the old-time watchman's rattle, and the toy formerly known as a cricket. This for a while greatly delighted the capricious creature, and she made the wheel almost fly; at the same time, in unison with the whirr of the wheel, was her own soft, cheery warble. It was very low, yet very distinct. I remember once on a larger scale witnessing an analogous sight, when, unseen, I entered a room in which was a woman spinning wool, and singing at the top of her voice, in keeping with the loud whirring of her spinning-wheel. For quite a while she was unconscious of my presence, so absorbed was she in the noise she was making.

Without her wheel the life of little Hespie would have been rather monotonous. Expecting to see some antics in the slipping line, the trick was tried of covering a part of the inside of the wheel with smooth, sized paper. Mousie entered and started the wheel, and in the deftest way jumped the smooth paper floor at

every revolution, actually keeping the propulsion up with but a slight diminution of the usual speed. This was certainly a very pretty feat. We next shut her out of the wheel by corking up the entrance. She worked desperately at the closed aperture; then in despair gave vent to a piercing little cry. It was surprising what a strange pleasure this sound afforded me; it showed so clearly the difference in the timbre or quality of this sound of distress from that which I have called her singing. She was a good deal excited, and ran frantically into and out of her little bed-box, which had a hole at each end. Soon this tiny gust of rage passed over.

She now, although running about her cage, indulging in little gambols, indicating exquisite grace and agility, struck off into a truly beautiful strain of song. It occupied about three minutes, and had in it considerable scope and variety. First there was a clearly enunciated expression like that of the cooing of a turtle-dove, a soft note, with a deliberate slowness. This changed into a series of more rapid notes strangely suggesting, though not so weird-like, the conchy clamor of the American cuckoo (*Coccyzus*), then closing with a series of short, rapid sounds, like the tapping of the woodpecker on a tree.

A very noticeable fact was that a great deal of this little creature's song was poured forth while at play — that is, while in actual activity; and, take the wheel-play, for instance, when really in quite violent exercise. A fact too, which much surprised me was, that often when eating she sang and ate at the same time,

literally in the same breath. This singular habit, so suggestive of a great physiological difficulty, led to an incident which caused considerable merriment for all of us who witnessed it.

I had been examining some insect larvæ on a twig of black alder. Without any real motive, a bit of the twig, about an inch long, and an eighth of an inch thick, was offered to Hespie. She was delighted, and at once began in her usual pretty way, sitting up, to eat the bark, although it was very bitter. Thus she sat "bolt upright;" and held this little black stick in both hands up to her mouth, at the precise angle in which a fife is held, although nibbling away, yet singing at the same time, so that she looked like a little fifer playing on an ebony fife, and laughter at the pretty but comical sight was irresistible.

Conduct with Strangers.

Wishing to see how this Hesperomys would behave in company with another species, I put into her cage a young domestic mouse about one-third grown. She was asleep in her bed-box. When she awoke it was a pretty sight. What animation! How the black eyes started and sparkled! They seemed to snap with fire. The whole frame was in a quiver — first of astonishment, then with rage. It was not a run, — but a jump or spring which she made at the involuntary intruder, inflicting a bite that made it squeal in terror. I removed the little captive, who was so astonished that it was quite content to lie in my hand. Its terror won

our pity, and we restored it to liberty. I had a friend who had once a singing domestic mouse, of very moderate musical ability, however. But one day he captured two specimens of the white-footed mouse (*Hesperomys leucopus*), and supposing it would be good company, put them into the cage. Great mistake it was. The two white-footed barbarians abused the hospitality, and murdered poor *Mus musculus*, despite its accomplishments.

It was only necessary to avoid crossing her sweet will, and Hespie was an engaging plaything for my children. Using a term of the watermen, they had one play which they called "hauling in the lines," in which they used the terms "hauling in," and "paying out." Simple as it was, Hespie seemed never to tire of it. It consisted merely in slowly feeding to the little thing the end of a long cotton cord. She would sit up on her hind-legs, and with her front paws, hand-over-hand, almost sailor-like, take in the cord, which the children would slowly draw out again to see her again "haul it in."

Animals have their bed-nests, retiring places to which they cling with tenacity, and to be deprived of which begets a moping akin to homesickness. Strange to say, Hespie had periodical nostalgia, and it came about in this way. The cage was regularly cleaned. This at all times was annoying to her. The little bed of cotton wool, in a small box in her large compartment, was taken out and burned, and a fresh one supplied.

This was done once a month, and invariably this

change of bed was followed by a day or two of homesickness. She was unhappy, — did not like the situation, would tear her bed up, pull it out, then pull it in, in part, — then, as if in disgust, go off and lie down outside the bed-nest, an unpleasant thing for her, as she did not like to sleep outside the privacy of her little box. In a word, she would be really sick, and refuse food. After two days, she would become reconciled, and, forgetting her troubles, be as merry as ever.

Nature of Hespie's Music.

And now is it not time to ask, how much truth there is in the theory of some that the singing of these mice is the result of disease, or some bronchial disturbance? In my opinion the following reasons disprove the truth of any such theory: —

1. The exquisite animal enjoyment, and actual physical condition maintained; for she was fat, and perfect in pelage and form, indicating high health. Every form of bronchial disease is in its most ordinary effect depressing to the animal spirits.

2. When engaged in song the muscular exercise reached to the very depths of the chest, as is seen in the lowing of kine, where the muscles may be observed in action for the entire length of the abdomen. Persons afflicted bronchially avoid deep vocal exercises.

3. The singing was so often performed under precisely those circumstances in which bronchially diseased

persons are sure to keep still, if possible. For instance, take the Wheel Song. Here, although the exercise was violent, the song would be sustained all through with no diminution of vocal strength, and quite frequently was it the case that when the animal stopped turning the wheel, though she continued the song, the momentum would throw her on her back, when, as if in surprise, she would roll off four or five notes on a higher octave, and in a greatly increased loudness of voice.

4. Our Hesperomys delighted in a rôle, the performance of which argued these three facts: — A high organization of the mechanism of the voice; delicate and skillful adjustment during use; a perfect condition as respects health. She could sing and eat at the same time. When a boy I was fond of whistling, usually selecting some ballad tune; and it was with perfect ease that the strain was continued through an entire stanza, without any break for the sake of getting breath; for ere the expiring air had become exhausted I inverted the process, thus continuing the strain with the inspiring air as it came through the orifice formed by the lips. I also remember that it was said of Jenny Lind that she could use the inspiring breath in singing, though I cannot vouch for the truth of the statement.

Now this fact, in the case of our Hesperomys, that she could eat and sing at the same time, — even admitting, what is probably true, that there are intervals of a very short duration (so short as to be almost indiscernible) when the epiglottis closes to allow the food to pass down the gullet, — demonstrates, so I think, that

the mechanism of those parts was very delicate, and that the whole organism was in the very highest condition of health. I say nothing about that dual vocalization other than that I think it points in the same direction.

It was an elevated sentiment of an old writer who ascribed this ability for pleasant sounds to the gift of a benign Omnipotence, Who thus empowers animals to make known to others their wants, their pains, their sorrows in melancholic tones — their joys and pleasures in more harmonious notes. Who less than the wise and indulgent Creator could form such an economy as that of melody and music, — the harmonious pulses of every animal voice and every musical pipe? And such the curious structure, and ingenious lodgment of the auditory nerves, that by this pleasantry of sound the perturbations of the mind are quieted and stilled. And music affects the fancy with delight as well as appeases the turbulent passions of the breast. And descending from the great to the small, I am sure that Hespie found much happiness, — an almost human joy, — when tuning her little pipes.

Before giving the close of Hespie's career, I prefer to say something on the vocal ability of certain allied animals.

CHAPTER XXIV.

HESPIE'S MUSICAL COUSINS.

ONE must not run into the vice of generalizing on too scanty a stock of facts. Yet I have seen enough to make me disposed to think that as an order, the rodents possess a large amount of undeveloped ability for musical utterance. Few of us are aware to what extent among the domestic mice singers abound. I have had them, though their vocal abilities have been quite limited.

The white mouse is simply an albino of the house mouse. Some one in Maryland was so desirous to obtain a singer of this variety that he raised several hundred white mice. His perseverance was finally rewarded in part. He obtained a singer, but of very moderate ability, for it sang but a few times in its record of six months.

Singing rats also have been observed. We have now the Hesperomys, thus affording three well marked *singing* genera of the Muridæ, or mouse family.

Of the Sciuridæ, or squirrels, I can only speak of three genera with certain knowledge — the gray squirrel, the chipmunk, and the flying squirrel. All these are capable of musical sounds, though I have not yet

found any with the capacity sufficiently advanced to be worthy to be called singers.

And there is also the occasional whistling of the woodchuck in its burrow, the notes though monotonous being rather sweet, especially of the young. In the Northwest occurs the largest of the species, known as the Hoary Marmot, and oftener as the Whistling Woodchuck.

And this recalls a pretty incident related by a gentleman. It happened when he and his brother were small boys on a farm. They had found a litter of woodchucks, or marmots, and took two of the little things home, getting there at dinner-time. The mother, a good thrifty housekeeper, ordered him to take the "vermin" out of the house. The little boy was about to obey, although sorrowfully, when he pleaded for some milk for the poor things. This was the auspicious moment; and one of the little captives set up a pretty whistling song. It was enough! The good woman's motherly heart was touched. The boys sat at the table, and shared their milk with their pets. But the career of the musical prodigy was brief, — the two marmots soon died.

I have already mentioned that one summer I caught a young rabbit in a patch of wild lupines, and was struck with the silvery musical ring of its cry when my hand touched it. And the rabbit, like the woodchuck, is also a rodent.

I was once dining at a farm-house in the time of the singing of birds, when my ear took in what I recognized as the sound of rodent music. The farmer's

wife said that their son, an active lad kept guinea pigs, and she had heard those sounds several times, and they were made by the wrens, which came to eat of their food.

As I had never known the house wren to be other than insectiverous, I did not accept the lady's supposition, but asked her to go with me to the pen of guinea pigs. She admitted she had never seen the bird that did the singing. I soon found that the melody came from a mother guinea-pig; and it seemed as if she was talking, or lullabying to her young. As might be expected the good woman was quite astonished.

It is seen, then, that here are enumerated five genera and nine species of these animals with musical powers to a greater or less extent, and they are all rodents.

It is worth asking how far man's training or culture could develop and improve this potentiality or latent power in the rodents to sing. I have known Hespie to be incited unto song by hearing the piano, especially if the playing was in the natural key. My friend, who caught her, was firm in the belief that on one occasion she made, not without some success, an effort to imitate the canary. If this is a fact, it would of itself prove much in the direction of these remarks.

I recall a little matter which at the time afforded myself and my class, to whom I was lecturing, considerable interest. One of the students brought me in a tin preserve-can a very fine *Hesperomys leucopus* (white-footed mouse). The can was put on my laboratory table. At a point in the lecture a pretty sound proceeded from the captive. It was a silvery purring,

differing from that of a cat, in that the timbre was metallic. So short the notes, so quick and close, that as said, it was like a purring. I was surprised to find that the little thing made the sound by tapping the tips of the toes of one foot on the side of the can. But then such tapping! How dainty the touch and rapid the movement. It was really instrumental music. And what the motive? Was it amusement? Who can tell? Though this was fully ten years ago the incident is very fresh in my mind.

And this recalls a passage in an old number of the *American Naturalist.* J. M. Mulligan describes a pair of pet prairie-mice, which had been taken out of a nest in a hollow tree. He says their motions were remarkably quick. When performing their ablutions their comical appearance invariably excited laughter. One little paw would be moistened and drawn over the ears and face so rapidly that it required sharp eyes to follow the motion, the other paw alternating till a satisfactory state of cleanliness was obtained. As a final touch to the toilet, the long slender tail was switched through the mouth from base to tip with lightning speed.

He says further: "I observed once a habit in our prairie-mice that I do not remember to have seen noticed before in any of the Muridæ. When frightened they would make a clear, quick, rattling noise, by alternately lifting their fore feet and vibrating them against whatever they were resting on. Occasionally a loosely folded paper was laid on the table for the mice to hide in. They sprang their rattle much more

frequently when on the paper than when hiding behind books on the table, probably because they found the paper a better medium of sound than the solid table with its cloth cover. In a hollow log or stump this noise probably proves an effectual means of communicating alarm to each other. After keeping our pets three months they escaped — we never knew how."

Now to return to Hespie. My attachment to the little thing at last took the form of companionship. Often my work was carried far into the night when all my family were asleep. It had been for awhile necessary for me to have my bed in the study; thus I could have things my own way, and not disturb others. The pen laid down, I would go to bed and too often with insomnia upon me. Then, more than once it occurred that Hespie's soft warbling in the dark lured coy slumber; for I have fallen asleep listening to the lullaby of my little quadrupedal bobolink.

I must offset the above with a little experience given in the Standard Natural History by Dr. Coues. He is speaking of the *Mus Musculus*, the House Mouse: "There is only one capacity of this little creature to which I need allude, and that is its singing, — a musical faculty which all have heard of, but probably few have heard, leaving many to doubt. A mouse which I had once presented to me was a great singer. Placing the cage in my bed-room, I turned off the gas and retired, to give it every encouragement to proceed with the expected programme in quiet and darkness, but with grave doubts that it would favor me with a song. In a few moments, however, the little musi-

cian piped up, and sang very prettily; it was not squeaking, but singing, musically and rhythmically, in a high key, with a thin and wiry, but not displeasing quality, something like a weak-voiced canary-bird.

"Listening for some time till I grew sleepy, I placed this eccentric *prima donna* in an adjoining room, at least twenty feet from my bed, the door open between; but even at that distance the singing was loud enough to disturb me, and I had to carry the little creature down stairs before I could get to sleep."

In this connection I think the following letter from an English traveler to *Nature* is too interesting to be omitted:—

Last winter we occupied the rooms we now do at Menton. Early in February we heard as we thought the song of a canary, and fancied it was outside our balcony; however we soon discovered that the singing was in our *salon*, and that the songster was a mouse. At that time the weather was rather cold, and we had a little fire, and the mouse spent most of the day under the fender, where we kept it supplied with bits of biscuit. In a few days it became quite tame, and would come on the hearth in an evening, and sing for several hours. Sometimes it would climb up the chiffonier and ascend a vase of flowers to drink at the water, and then sit and sing on the edge of the table, and allow us to go quite near to it without ceasing its warble. One of its favorite haunts was the wood-basket, and it would often sit and sing on the edge of it. On February 12, the last night of the Carnival, we had a number of friends in our *salon*, and the little mouse sang most vigorously much to their delight and astonishment, and was not in the least disturbed by the talking. In the evening the mouse would often run about the room, and under the door into the corridor and adjoining rooms, and then return to its own hearth. After amusing us for nearly a month, it disappeared, and we suspect it was caught in a trap set in one of the rooms beyond.

The mouse was small and had very large ears, which it moved about much whilst singing. The song was not unlike that of the canary in many of its trills; and it sang quite as beautifully as any canary, but it had more variety, and some of its notes were much lower, more like those of the bullfinch. One great peculiarity was a sort of double song, which we had now and then, — an air with an accompaniment. The air was loud and full, the notes being low, and the accompaniment quite subdued.

Some of our party were sure there was more than one mouse, until we had the performance from the edge of the wood-basket, and were within a yard or two of it. My son has suggested that many or all mice may have the same power, but that the notes are usually so much higher in the scale that, like the cry of the dormouse, and the bat, they are at the verge of the pitch to which the human ear is sensitive. This may be so; but the notes of our mouse were so low, and even the highest, so far within the limits of the human ear, that I am inclined to think the gift of singing in mice is but of very rare occurence.

J. S.

Hôtel-de-Menton, Menton, France, Oct. 31, 1877.

Of the several accounts of singing mice that have come to my notice, the above is the most interesting. This mouse at Menton was surely a remarkable musician. Still I think my little Hesperomys was unapproachable.

Said an amiable lady: "I am done with pets; it is so hard to lose them." It is even so — the same end cometh to all. And for Hespie this was drawing near. Already the witchery of the little songstress was gone. Her little melodies were becoming snatchy, and broken, and less silvery, and the intervals of silence were getting prolonged. Then the singing entirely

ceased. Nor was there any more whirring of the wheel, for all her merry gambols had stopped. Hespie was sick, — that malady unpreventable and incurable had set in, nature's decay. There came a dragging of those hind limbs, erst so agile. Now too, for it followed close, I noticed that the naive cunning of the little hands had gone — there was an uncertainty, an unsteadiness, their deftness was over. It was now too plain that a general paralysis had set in.

And now it happened to poor Hespie, as it hath to wiser folks, — with affliction came a certain soberness of conduct eschewed in prosperity. The capricious vixen had become transformed into a little sufferer seeking my attention and caressing. It was the night before Easter, and insomnia had stolen the hours. I heard a little sound in Hespie's cage. It was a movement indicating distress; — for the musician now was dumb. The night was cold. I arose and took the poor thing into my hand, and then returned to my warm bed. The hours passed, and the Sabbath dawn had come. There had, I fancied, been a little sound, — a muffled trill. It was the last spark of the life ember — Hespie was dead in my hand!

A little mount was made of her by Bell, the most eminent taxidermist of the day; and the cadaver was sent to a learned professor of anatomy; but nothing came of it. I had thought that both throat and ear might be concerned in the little being's musical talent. I only knew that she was one of the sweetest singers that ever charmed the human ear.

CHAPTER XXV.

CLASSIFYING ANIMALS.

IT would be exciting, though not always pleasant, if we could follow into strange lands those sacrificing men, the exploring naturalists; or, even those hunters, whose prowess is so defiant of danger. We should then see the lithe tiger, and the huge elephant in their own jungles, and the rhinoceros and hippopotamus in their wallows by the tropical rivers; and very many other beasts of interesting forms and habits.

But we should learn of the hunter very little besides bloodshed and adventure, and great is the pity that this is the case. With very few exceptions, even from the exploring zoölogist, we should gather not much else than zoölogical notes, technical and dry, dealing mostly with the determination of species, and their distribution.

In our treatment thus far, we have gone deeper than the scalpel could go, even down to the animal mind. Dealing mostly with those animals of which I had an intimate and familiar knowledge, I have chosen to give a specific and individual biography of a few of those dumb creatures, that cannot speak for

themselves. The few we have so treated all belong to the Class *Mammalia.* And it is proposed in this same biographial way to give life sketches in each Class of the great Branch of the Animal Kingdom, designated as the *Vertebrata:* thus following the Mammals, in their turn, will come individual memoirs of birds reptiles, amphibia, and fishes, since all these, but no other animals possess the bony structure known as the vertebral column.

Principles of Classification.

I think, then, we should now be ready for a little lesson on Classification, as a suitable close to this portion of our Animal Memoirs devoted to the Mammals. It surely should interest us to know something of the grounds or reasoning upon which the systematic zoölogist tries to erect a grouping or arrangement of animal forms.

The early zoölogists took the existing fauna of the earth to be the sum total of the animal creation. They believed that the Divine Mind never made any living thing upon the earth beyond those which now exist. Whereas, the present realm of sentient beings is but a stage, or epoch, in that career of life which has so long animated the surface of the globe. The buried forms, exhumed as fossils, make it highly probable that the species, now utterly extinct, but which formerly dwelt upon this earth, vastly outnumbered the existing dispensation.

But the present has a subtler relation to the past

than the question of mere numbers. It is but a portion, advanced it is true, in time and excellence, of a life system which began as soon as the earth was fitted to be the home of living things. Thus, as belonging to a vast plan, it is intellectually linked to the past. Herein might easily be shown the importance of every extinct animal form made known by the continuous discoveries of fossil bones, since each sheds light upon the position in the great scale of animal being of some one species living now.

Omitting the slugs, or so-called shell-less snails, but which have within a small limy scale, let us look at a sea-shell. We notice that the soft parts, the sentient animal, is inside the shell, which is composed of carbonate of lime. So too with the insect; its soft parts are enclosed in a horny encasing. The *Mollusca* and the *Insecta* are names for great Branches of the animal kingdom.

Now how different is the Branch *Vertebrata*. The skeleton is internal, and composed of bone consisting of phosphate of lime. Through the length of the body is a series of bony joints called vertebræ. These compose the vertebral column, with the skull at one end. Each joint is hollow, and through the series runs the spinal cord, connecting with the brain in the skull, and throughout the two are disposed the nervous centers. Then in a Vertebrate we notice a bi-lateral symmetry; on each side of the vertebral column are arranged the arms, and legs, and ribs.

At present it is not the best usage to place the true insects in an independent Branch. A beetle or

a fly is an articulated thing. The body is in three parts, and the six legs are in jointed pieces also, and so of its tentacula, or feelers, — in fact, of its entire structure. And there are many living things put together in this way, for besides these Hexapods, or six-legged creatures, there are the Octopods, or eight-legged, namely, the spiders, and the Decapods, or ten-legged, the crabs, and the Centipeds, and other Crustaceans which have members with many legs. And every one of these living forms is articulated in all its external parts, or skeleton; hence these are all now placed in a great Branch, called *Arthropoda*, meaning jointed limbs.

Still descending on the scale, we find branches typically represented by the worms, the Echinoderms, or sea-eggs, the Sponges, and the Protozoa, or lowest forms, mostly so small as to need the microscope to make them visible.

And now a word as to the Class *Mammalia*, which is a section of the Branch *Vertebrata*. Like the birds they have warm blood, while the reptiles have cold blood. But the corpuscles of this vital fluid in the vertebrate are shown by the microscope to differ in size and form from those in the blood of either bird or reptile. In the Mammal they are smaller and round, in the others they are elliptical.

And as to the word Mammal, the possession of those organs which contain the milk-glands makes a physiological difference of the broadest character. The food thus provided for the young has no equal for nourishment. This, with the method of raising

their offspring by suckling, easily separates the Mammals from all other creatures.

Among other differences in the skeleton is one which to our eyes might seem trivial, but to the anatomist has a prime importance. He tells us that a Mammal has two occipital condyles, while a bird has but one. But the terms being purely technical need explanation.

As every one knows the skull has an opening at its lower hinder part, or over the neck — that is, in the occipital region. At the edge of this opening, on each side of the rim, is a little projection of bone. These are the two condyles; and the word is simply Greek for the English word knob, or protuberance. Each of these has one side rounded, and the other flattish. And they are the places of attachment, or support of the two hinges, by which the head is joined to the atlas or top joint of the spinal column. Thus the head of a man or a beast works on a pair of hinges, while that of a bird moves upon only one.

The Branch *Vertebrata* is subject to several methods of division; but all systematists have more or less definite ideas on the divisions known as orders. Now, as we have dwelt somewhat on the rabbits, hares, marmots, squirrels, etc., all known by their chisel-shaped front teeth, and on this account put in the order *Rodentia*, or gnawers, let us take up this one order as an example of method in its subdivisions.

If you will take a rabbit or guinea-pig in your hands, you can push a finger through its mouth sideways, because there is an unfilled space between the

back teeth, or molars, and the front teeth, or incisors, the teeth known as the canines being entirely wanting. Thus in a rough way it may be said, a Rodent is an animal with generally "two long, curved, sharp-edged, rootless incisors in each jaw," and no canine teeth, and the grinders but few, and widely separated from the front teeth. That is, it is not fully toothed, — but partially so. Hence this order, as in the advance quite naturally follows the Edentates proper, — the ant-eaters, armadillos, and such as are almost or quite toothless; while it precedes the Carnivores, as being very far in advance, they having the dental system in its highest condition.

But the order *Rodentia* is simply immense in the number of species, and of wonderful diversity as to the size and forms of its animals. Compare that tiny midget, the field-mouse, with the beaver for size; and for contrast of form and habit, the chipmunk and the porcupine; or in the matter of fur, put together the spiny hedgehog and the delicate chinchilla. But the list is very long, and exhibits plainly the marvellous capacity of Nature for variety, even in a simple type, or pattern of a living form.

But this fecundity of invention is to the naturalist a source of perplexity, in that it presents to him a difficult problem with some of the factors not apparent, which are necessary for its solution. The time was when this rich potency of nature was but poorly understood, and the idea of classifying together the pretty chickaree and the formidable porcupine seemed preposterous.

Now to me this section of the animal kingdom appears the most natural of all, and the clearest in its ordinal traits. Nevertheless, the diversity mentioned stands related to other interesting differences that seem to ask for at least a division of this great order into lesser groups, which shall rank as sub-orders. But where shall we begin? for in nature this beginning at the beginning is sometimes like commencing history before history began, as may be seen literally in the exhuming of buried dynasties in Egypt and Nineveh. Almost similarly came a discovery which furnished the starting-point for a clear and natural grouping of the order.

It is a very few years since the complete dentition of the Rodents as an order was known, and this came of the discovery in 1857 in the pampas of La Plata, in South America, of the fossil skull of an ancient gnawer which, as it was over twelve inches in length, indicated a Rodent of very large size. It was found in the Pliocene formation; and, doubtless, the beast roamed over those vast pampas feeding on the rank and coarse grasses, an odd survival of one of the ancient forms, and in marked contrast in every way with those smaller and burrowing Rodents then existing who probably paid small respect to their strange old ancestor. This relic of the past has received from Science the name *Mesotherium cristatum*, — as if it was meant to call it the Crested Half-way beast. As an early Rodent, in comparison with the present, it was much behind the tribe, and assuredly coarse in habit. It seems to me that its incisors, which are almost flat, would indi-

cate a breaking or bruising of the rank herbage rather than the nice cutting or cropping of the present race.

As Dr. Coues, following Alston, puts this matter of dividing the order Rodentia into three sub-orders, in a very clear and beautifully simple way, I must be allowed to reproduce the tabulation.

I. Upper incisors 2, lower 4; enormal or blunt-toothed Rodents *Sub-order* HEBETIDENTATA.

II. Upper incisors 4, lower 2; subnormal or double-toothed Rodents *Sub-order* DUPLICIDENTATA.

III. Upper incisors 2, lower 2; normal or simple-toothed Rodents *Sub-order* SIMPLICIDENTATA.

Thus the three sub-orders given in small capitals really explain themselves, as dull-toothed, the incisors not being adze-like; — double-toothed, that is having double the normal number of incisors in the upper jaw; — and the simple-toothed, two in each jaw, that is, the normal-toothed Rodents.

Of course in Sub-order I., which is founded on the fossil, there can be no further division until more material is got. But in the other two sub-orders, such the number of species, further division is imperative. Let us take Sub-order III., which includes the most advanced, or the normal Rodents. In it, with many other forms, are the squirrels, rats, and porcupines. Let us accept these as types or representative forms of so many classes in the third sub-order.

In those Rodents, which affiliate in form with the porcupines, and may be called "porcupine-like Rodents," all have the two leg-bones, tibia and fibula, distinct,

and separate throughout their entire length, and this feature "is always associated with a peculiar shape of the lower-jaw bone." There is also a hairy muzzle, and the nostrils have a linear shape. "These and other characters mark such animals as a natural alliance, which has been called the Hystricine series, *Hystricomorpha*, that is, the porcupine-like Rodents."

If now a rat or mouse, or any Rodent closely related be examined in the same way, the leg-bones will be found to be united through a portion of the lower extremities. And this peculiarity is connected with "a special shape of the jaw-bone, unlike that of the porcupine." The muzzle, too, is more or less naked, and the upper lip is cleft, and the nostrils are comma-shaped. The numerous Rodents with these characters "constitute the Murine series, or the *Myomorpha*, the mouse-like Rodents."

"Once more," says Coues, to whom I am here indebted, "the squirrels, and their relatives, display a third set of characters, consisting essentially in the combination of such leg-bones as the Hystricines have, with the shape of the jaw of the Murines; yet the muzzle is finished off as in Murines, and never as in Hystricines. It is this combination of characters which enables us to arrange them all in a Sciurine series, *Sciuromorpha*, the squirrel-like Rodents."

In each of these sub-orders are many genera or families, and these again are marked off into species. But as these minor divisions were explained in an early chapter we must not reiterate.

Though profitable, this closing lesson may have

proved dry to some. If so, let us hope to condone this fact in our next, when, with the birds, perhaps fancy may be allowed higher flights. But I must tell my reader, — that eye sees the furthest which has seen the deepest! He best enjoys the views of nature, who looks also at the framework of things.

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